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# A Quantitative Descriptive Study of the Academic Achievement of Black Students In Nonpublic Secondary Schools

Denise M. Brown-Allen

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A QUANTITATIVE DESCRIPTIVE STUDY OF THE  
ACADEMIC ACHIEVEMENT OF BLACK STUDENTS IN  
NONPUBLIC SECONDARY SCHOOLS

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Submitted in Partial Fulfillment  
of the Doctoral Requirements for the Degree  
Doctor of Education  
Seton Hall University

2003

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## ABSTRACT

### A Quantitative Descriptive Study of the Academic Achievement of Black Students in Nonpublic Secondary Schools

The purpose of this study was to describe and quantify the achievement gap in nonpublic secondary schools. Using statistical inference and a quantitative descriptive method of analysis, the study describes the achievement gap between black and white students in nonpublic schools and examines the variables that may contribute to the gap. The study compares the achievement gap between black and white students in nonpublic schools to the differences in achievement for black and white students in public schools. In addition, the achievement of black students in nonpublic schools is compared to the achievement of black students in public schools. The achievement gap is measured by the difference in the mean scale score for the subgroups on the NAEP mathematics examination.

The study examines such variables as a mean mathematics scale score, time spent doing homework each day, parental support for student achievement, literary articles in the student's home, students' self perception of mathematics ability, and participation in Advanced Placement mathematics courses. Current research has identified these factors as possible explanatory variables for differences in academic achievement. The study also reviews research on the correlation between student achievement and teacher quality, teacher expectations, socioeconomic status and class size.

This study found that while narrower than the achievement gap in public schools, there is an achievement gap between white and black students in nonpublic and private schools measured by their performance on the NAEP mathematics exam. The

achievement gap in private and nonpublic schools is narrower in grade twelve compared to grade eight. This study also found black students are performing better in nonpublic schools than their peers in public schools.

## ACKNOWLEDGEMENTS

My mantra throughout this process has been Philippians 4:12-14 “I can do all things through Christ who strengthens me.” My strength was drawn from Him and from a long line of educators. I approached each course and deliverable in the dissertation process as if they were mile-markers along the challenging course of a long-distance race. My family served as the volunteers at each checkpoint who generously supplied the spiritual and material fuel I needed to continue running the race. They also served as the cheering fans along the course pushing me towards the finish line.

I thank my friends and family for their encouragement, patience and support. I thank my committee members for their time, guidance and expertise. I offer special thanks to my mentor, Dr. John Collins for keeping me focused and to Dr. Gloria Essoka, the master wordsmith.

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## CHAPTER 1

### INTRODUCTION

#### Background

Over the past decade a war has been waged against American public schools (Bracey, 2002). There have been fierce battles involving proponents of standardized testing, supporters of school choice, and other critics of the quality of education our public school system provides the nation's children. While public education opponents and advocates battle over the shortcomings of the nation's public school system, private schools may benefit from the fall-out. Legislative reforms have provided funding for minority and economically disadvantaged children in inadequate public schools to attend private schools (Caire, 2002).

Proponents of private school education report that students, in particular minority students, receive a superior education in private schools compared to public schools (Coleman, Hoffer, & Kilgore, 1982; Closson, 1994, Beisner, 1999). Current research suggests socioeconomic variables such as family structure, parent education, occupation, and income have a stronger correlation with student achievement than school type (Lai, 1997; Orr, 2000; Cobb, 2002; Sorenson, 2002). Despite these findings, private school students continue to outperform public school students on standardized tests. For example, students in religiously affiliated schools earn higher verbal scores and students enrolled in independent schools receive higher SAT math and verbal scores than their peers in public schools (College Board, 1999 b; Council for American Private Education

(CAPE), 2001). In 1999 private school students also scored significantly higher than public school students on the Repeat of the Third International Math and Science Study (CAPE, 2000). The Council for American Private Education (2000) suggests that if private school students' scores were used as the national norm, the U.S. would have moved from 19<sup>th</sup> to 12<sup>th</sup> in math and from 18<sup>th</sup> to 6<sup>th</sup> in science among the field of 38 countries who participated in Third International Math and Science Study (TIMSS-R).

In an effort to improve American education and make public schools more accountable, the Elementary and Secondary School Act of 1965 established the National Assessment of Educational Progress (NAEP) to measure national educational achievement (Olson, 2002 b). The NAEP, also known as the "nation's report card", has assessed the academic achievement of 9-, 13-, and 17-year olds in reading, math, writing and science since 1969 (Olson, 2002 a). The NAEP measures the nation's progress towards national education goals to improve student achievement beyond minimum competency levels (Campbell, Hombo & Mazzeo, 2000).

After declines in NAEP math and science scores during the seventies, there were increases for all age groups throughout the 1980's and 1990's. National reading scores fluctuated between 1971 and 1999, resulting in modest gains in average scores for 9- and 13- year olds and no significant gains for 17-year olds (Campbell et al, 2000). During the same time period, students in Nonpublic schools earned higher NAEP scores than their counterparts in public schools in all three-subject areas and in all three age groups (Donahue, Voekl, Campbell, & Mazzeo, 1999; CAPE, 2000). Since the national educational achievement test's first offering in the late 1960's, blacks have earned lower reading and math scores than whites. High school and college completion rates for

blacks also lag behind that of whites. This disparity in educational achievement and attainment translates into black-white gaps in employment and earnings (U. S. Department of Education, 2001 d).

The Scholastic Achievement Test (SAT) and the Advanced Placement (AP) tests, internationally recognized assessments for college placement, are administered by the non-profit organization, the College Board. From 1963 to 1982 there was a decline in SAT scores due to the increased participation of blacks, women and low-income students during the period (College Board, 2000). Mirroring the trends in NAEP scores, the SAT scores for whites during this period were significantly higher than blacks. The gap between SAT scores for whites and blacks narrowed in the late 70's through the 80's and then began to widen again in the 90's (Public Broadcasting System (PBS), 2001). SAT scores rose for all racial and ethnic groups between 1991 and 2001, however, white students continued to outperform all minorities, with the exception of Asian Americans, on the math and verbal sections of the SAT. In 1999 African Americans scored 93 points below white students on the verbal section of the SAT and 106 points below white students on the math of the SAT (PBS, 2001). "Black students in private schools, however, scored 84 points [on the SAT] higher than black students in public schools" (CAPE, 2000, p. 4).

In response to growing evidence of declining academic achievement among America's school children, education reform became part of the national agenda. In January 2002 the Elementary and Secondary School Act was reauthorized as the *No Child Left Behind Act of 2001*. The new Elementary and Secondary School Act allocates funding for the creation of smaller schools, an increase in the quality of teachers, and a

decrease in class size. This legislative reform also requires each state to meet target proficiency levels for all K-12 public school students and progress towards 100 percent proficiency in reading and math for all students (Loschert, 2001). In addition, President Bush's administration promises that the Act "will help close the achievement gap between disadvantaged and minority students and their peers" (U.S. Department of Education, March 20 2002).

The Bush Administration has solicited the aid of leaders in the African American community to support federal efforts to improve academic achievement among minority school children and narrow the achievement gap between white and minority students in public schools. The National Black Caucus of State Legislatures supports public school education as the "most effective and equitable means to raise academic achievement levels of African American children" (National Black Caucus of State Legislators (NBCSL), 2001).

#### Purpose of the Study

While much attention has been given to measuring and closing the achievement gap in public schools, little attention has been given to this phenomenon in nonpublic schools. The purpose of this study is twofold: to describe the achievement gap between black and white students in private and nonpublic schools and examine the variables which may contribute to the achievement gap between black and white students. Using a quantitative descriptive method of analysis of data, this study will compare the achievement gap between black and white students in public school to the differences in achievement for black and white students in private and nonpublic schools. The study

will contribute to the limited research that examines how school type affects the academic achievement of black secondary school students.

The study will examine such variables as: time spent doing homework each day, parental support for student achievement, literary articles in a student's home, student's self perception of mathematics ability, teacher quality, teacher expectations, socioeconomics, access to higher level mathematics courses, and class size. Current research has identified these factors as possible explanatory variable for the differences in achievement between black and white students (Hsieh, 2000; Orr, 2000; Weishaar, 2001; Wenglinsky, 1996). School administrators, teachers, and students at participating NAEP schools supply information related to these variables as part of the test administration.

For the purposes of this study, educational achievement is defined as attaining minimum competency scores on a select mathematics achievement test. The study will utilize 2000 National NAEP mathematics examination scores for grades eight and twelve for comparative analysis. For the 2000 examination, the National Assessment Governing Board determined Grade eight students who earned at least an average score of 262, on a scale ranging from 0 to 500, perform at a "basic" level of achievement in mathematics. Similarly, Grade twelve students earning at least an average score of 288 perform at a "basic" level of achievement. (U.S. Department of Education, 2001 a) The achievement gap will be defined as the difference in 2000 NAEP Mathematics scores of black and white students in public, nonpublic and private schools.

### Theoretical Framework

Research conducted by sociologist James Coleman in the sixties found no correlation between academic achievement and the quality of a student's school measured by school expenditures per student. The Coleman research team learned academic achievement was more closely tied to the social composition of the school, the student's sense of control of his environment and future, the verbal skills of the student's teachers, and the student's family background (Beisner, 1999; Kiviat, 2000). Coleman's 1966 report on *Equality of Educational Opportunities* concluded that economically disadvantaged black children perform better academically in integrated schools. In a later report entitled *Public and Private School*, Coleman concluded that when family background factors are controlled, private and Catholic schools have succeeded in providing a better education for black children than public schools (Closson, 1994).

In recent years the achievement gap between black and white children has been attributed to numerous factors including test bias, the hip hop culture and the fact that black children watch twice as much television as white children (Johnston & Viadero, 2000). Although not documented or thoroughly researched, "lay theories" attempt to explain the achievement gap between black and white students. These theories center around differences between the parenting styles of blacks and whites and the value each group placed on education. Peer pressure and black students' fear of "acting white" may also affect their achievement in the classroom (Ferguson, 2002).

In the area of academic achievement, white children are better prepared for kindergarten than black children and white students participate in challenging courses at a higher rate than black students (Viadero, 2000). Low teacher expectations and negative



racial stereotypes also impact student achievement. The poverty rate among black students is higher than that of white students and teachers in poor and minority school districts are, on average, less qualified than teachers in more affluent white school districts (Haycock, Craig & Huang, 2001).

Jencks and Phillips (1998), suggest changes in classroom practices and organizational structures to close the achievement gap. An affirming learning environment and reduced class size, for example, have a positive affect on academic achievement. Schools must also be staffed with high quality (high scoring) teachers trained in classroom techniques to keep diverse students engaged and give students more opportunities to learn challenging academic content (Haycock, Craig & Huang, 2001).

### Research Questions

- RQ1. What is the enrollment pattern for black students in private schools?
- RQ2. How do black private and nonpublic school students in grades 8 and 12 perform on national achievement tests compared to white private and nonpublic school students in grades 8 and 12?
- RQ3. How do black private and nonpublic school students in grades 8 and 12 perform on national achievement tests compared to black students in public schools in grades 8 and 12?
- RQ4. How does the black-white educational achievement gap in private and nonpublic schools compare to the black-white gap in public schools?

- RQ5. What are the differences in the affect of the selected noncognitive student behavior, school and home environment variables on the educational achievement of black nonpublic school students and white nonpublic school students?
- RQ6. What are the differences in the affect of the selected noncognitive student behavior, school and home environment variables on the educational achievement of black public school students and black nonpublic school students?

#### Null Hypotheses

- HO<sub>1</sub>. There is no difference in the performance of black nonpublic school students and the performance of white nonpublic school students on the 2000 NAEP mathematics examination.
- HO<sub>2</sub>. There is no difference in the performance of black nonpublic school students and black public school students on the 2000 NAEP mathematics examination.
- HO<sub>3</sub>. There is no difference between the black-white achievement gap in nonpublic schools and the black-white achievement gap in public schools based on the average scaled scores from the 2000 NAEP mathematics examination.

#### Significance of the Study

Historically, black Americans have placed a high value on education and its promise of freedom and prosperity for black youth (Codjoe, 1997). Given the strong association between an individual's level of education and socioeconomic status, the quality of an individual's education has the potential to influence his or her quality of life (Lee, 1998; Jencks & Phillips, 1998). Academic achievement in American society

translates to greater opportunities for employment and higher income. Research conducted by Ogbu and Steinberg found “student academic performance is greatly influenced by the perceived relationship between academic achievement and access to jobs” (Miller, 1995, p. 210). Low academic performance among black children traps black Americans in low paying jobs and limits chances for social mobility and advancement (Jencks & Phillips, 1998). If black Americans are to participate in the American dream equally with whites, the black-white achievement gap in schools must be eliminated to insure the academic achievement of black students is on par with white students.

Leading educational policy analysts believe closing the achievement gap will result in economic advantages for people of color and improvements in race relations. Jencks & Phillips (1998) stated, “if racial equality is America’s goal, reducing the black-white test score gap would probably do more to promote this goal than any other strategy that could command broad political support” (p. 154). L. Scott Miller (1997) stated, “We can’t integrate leadership positions in our society without a large increase in high-achieving black, Native American and Latino students”(p. 4). College Board President Gaston Caperton sees the persisting education gap between the races as “our greatest national security threat” (College Board, 2001).

As the enrollment of black students in private schools increases, closing the achievement gap should be as high a priority for private school communities as it is in public school communities. This study will describe differences in academic performance for black and white children in nonpublic schools as well as differences between black students in private schools and black students in public schools. Studies have investigated

the achievement and social adjustment of black students in predominately white private schools; however, little attention has been given to the academic achievement of black students in private schools relative to their white peers (Lee, 1998).

Just as successful public schools serve as models for closing the achievement gap, trends and patterns identified during the analysis of private school data may confirm or refute educators' theories regarding proposed practice and policy changes targeting a narrowing of the achievement gap in public schools. The findings of this study will provide educators in private schools with measurement data to improve learning conditions in their classrooms. Evidence of a narrower achievement gap in nonpublic schools will provide public school administrators with valuable data and guidelines for improving their public education.

#### Limitations of the Study

The scope of this study is limited to academic performance in secondary schools and does not address the achievement gap at the elementary or middle school levels. This study is a secondary analysis of data collected by the U.S. Bureau of Census, National Center of Educational Statistics (NCES) and the College Board. The primary data sources will be the 2000 Grade eight and Grade twelve NAEP and the statistical reports provided by the College Board. Access to most private school demographic and educational data is restricted and is not available to the public domain (Matthews, 2002).

While current research addresses the achievement gap from a multiracial perspective, statistical analysis in this study will be restricted to the gap between black and white students. This study does not investigate the causal relationship between race,

school type and educational outcomes. This study investigates the degree to which disparities in black-white educational achievement and attainment exist in private schools. The current debate regarding the merits of school choice and voucher programs is beyond the scope of this paper; however, research generated from this debate will be referenced as it pertains to the achievement of black students in private schools.

### Organization of the Study

The research results are presented in five chapters. Chapter One presents the background and parameters for the study. Highlights from available literature on the topic of the achievement gap are summarized in Chapter Two. Chapter Three outlines the methodology used to gather the data presented in Chapter Four. The researcher's analysis of the data and conclusions are presented in Chapter Five.

### Definition of Terms

**Achievement Gap** - The achievement gap is the significant difference in performance on standardized tests between different groups. Performance differences have been documented between males and females, as well as between minority groups and whites (PBS, 1999). Academic performance differences between black and white students are the focus of this study.

**Basic** - Students performing at a "basic" level of performance on the NAEP mathematics examination demonstrated an understanding of arithmetic operations, procedural and conceptual knowledge when solving problems (U.S. Dept. of Education,

2001 a). For the 2000 mathematics assessment at grade eight the Basic cutpoint was a score of 262 and at grade twelve the cutpoint was a score of 288.

Proficient - Students performing at a “proficient” level of performance on the NAEP mathematics examination performed at a higher level than students at the “basic” level and were able to apply mathematical concepts and procedures consistently to solve complex problems (U.S. Dept. of Education, 2001 a). For the 2000 mathematics assessment at grade eight the Proficient cutpoint was a score of 299 and at grade twelve the cutpoint was a score of 336.

Advanced - Students who perform at an “advanced” level of performance on the NAEP mathematics examination, performed at a higher level than students at the “proficient” level and were able to generalize and synthesize mathematical concepts and principles (U. S. Dept. of Education, 2001 a). For the 2000 mathematics assessment at grade eight the Advanced cutpoint was a score of 333 and at grade twelve the cutpoint was a score of 367.

Black - Students who do not identify themselves as white, Asian American, Native American, Pacific Islander, Hispanic or Latino are referred to as “black” throughout this study. Black students may be African, African American, or Caribbean and identify themselves as black.

Minority - See “People of Color”

People of color - “People of color”, “ students of color”, or “minority” refer to individuals who are African American, Hispanic/Latino, Asian American, American Indian, Pacific Islander, or Multiracial (NAIS, 1997-98). The terms “minority” and “people of color” will be used interchangeably throughout this study.

**Nonpublic schools** - The National Center for Education Statistics classifies schools into several categories: public, catholic, other religious, unaffiliated, other nonreligious, Department of Defense Education Activity, and Bureau of Indian Affairs. The NCES designates Department of Defense schools as public schools within their own jurisdiction. For the purposes of this study, nonpublic schools are those not categorized as public schools by the NCES.

**Private schools** - Private schools are defined as those controlled or supported primarily by private or religious organizations (U.S. Bureau of the Census, 1998). Approximately 25% of the 114, 800 schools in the United States are private schools (CAPE, 2000). Department of Defense schools and charter schools are not considered private schools within the context of this study. The term “private school” will include all independent, parochial, religious and other nonpublic schools and may be used interchangeably with “nonpublic schools.”

**Independent schools** - Approximately 5% of private schools are considered independent schools. Independent schools are private schools that receive their financial support primarily from tuition, charitable contributions and endowments and hold not-for-profit status (National Association of Independent Schools (NAIS), 1997-98).

**Secondary Schools** - A secondary school has one or more grades between 7<sup>th</sup> and 12<sup>th</sup> and no grade lower than grade 7 (U. S. Dept. of Education, 2001 August b). Traditional high schools as well as junior and senior high school configurations may fall into this classification.

**Combined Schools** - A school with students in grades lower than 7 and higher than grade eight (U. S. Dept. of Education, 2001 c).

## CHAPTER 2

### REVIEW OF RELATED LITERATURE

#### Historical Perspective

Before beginning this analysis, it is important to understand the evolution of private school systems and the education of blacks in America. The first laws addressing the compulsory education of school age children were established in the 1600's (Gholson-Driver, 2001). After conflicts with Protestants over the manner in which their church doctrines were taught, independent Lutheran and Catholic educational systems were established during the 1800's (McClellan, 1999). Laws were subsequently enacted towards the close of the 19<sup>th</sup> century to challenge the existence of religious schools.

The Oregon School Law of 1922, for example, required that all [white] children between the ages of eight and sixteen attend public schools (McClellan, 1999). This law was an attempt to legislate the education of white children outside of the public school system as illegal. The Supreme Court's decision on *Pierce v Society of Sisters* in 1925 "affirmed the doctrine of compulsory school attendance [and] established the role of parochial and private schools in satisfying the state's demand that children receive schooling" (LaMorte, 1999, p. 20).



The American public school system was founded on Protestant Christian principles yet excluded the children of black slaves. Prior to the Civil War, the education of blacks was illegal in most states. Many slaves, however, were self-taught using the Bible as their sole textbook. Number skills were developed through counting and measurement tasks that were part of daily work duties. Missionary schools that were open to slaves focused on religious conversion and helping slaves accept their inferior position and conditions in America (Hoit-Thetford, 1986; University of Florida, 2002).

In 1863 President Abraham Lincoln issued the *Emancipation Proclamation* which mandated that all slaves held in the states that seceded from the Union “are, and henceforth shall be free” (U.S. National Archives and Records Administration, 2002). Throughout the 1800’s, however, laws were passed to place restrictions on the education of free persons of color. The curriculum for black students was limited to basic computation skills, reading and spelling (Hoit-Thetford, 1986). Northern abolitionists and missionaries created an education system for free blacks that was separate from the public education system for white citizens. Under this dual school system white students were educated by white teachers, black students by black teachers and there was no interaction between black and white schools or students (LaMorte, 1999).

The *Plessy v. Ferguson* decision in 1896 supported the segregation of black students within the public education system. The Supreme Court decision decreed the overcrowded classrooms with limited resources found in most black school houses to be “separate but equal.” Research conducted by Miller (1995) found in 1919 the student teacher ratio was 32 to 1 for all students, however, for black students the ratio was 56 to 1. Historical research conducted at the University of Florida (2002) found in 1915 there

was only one public high school in the south that open to black children. In addition, their research found that the average number of black students per teacher was 37.7 compared to 29.2 white students per teacher. White teachers earned \$25 to \$75 per month, while the average monthly salary for black teachers was less than \$50.

Historically, the annual educational expenditures for white students has been substantially greater than those for black students. Until the mid1900's the academic year for black students was on average 25 to 80 days less than white students (Miller, 1995). In southern school districts during the early 1900's the average expenditures per white students were two to seven times that of the average expenditures per black student (Miller, 1995).

Nearly sixty years after *Plessy v. Ferguson*, the 1954 *Brown v. Board of Education* Supreme Court decision declared "separate educational facilities are inherently unequal" and effectively denied the legal basis for segregation in the United States (Brown Foundation for Educational Equity, 2002). Under the protection of a federal court order and federal marshals, black students began to integrate white public schools in the south in the late 1950's.

Court decisions in the 1960's prohibited reciting prayer and reading the Bible in public schools, activities which were once a part of the public school tradition. Black and white parents who disapproved of public schools' move toward nonsectarianism looked to private schools as an alternate choice for their children's education. As public schools struggled to impart character and moral education devoid of religious overtones, as figure one reflects, enrollment in nonreligious independent schools and non-Catholic religious schools began to rise throughout the seventies and eighties (McClellan, 1999).

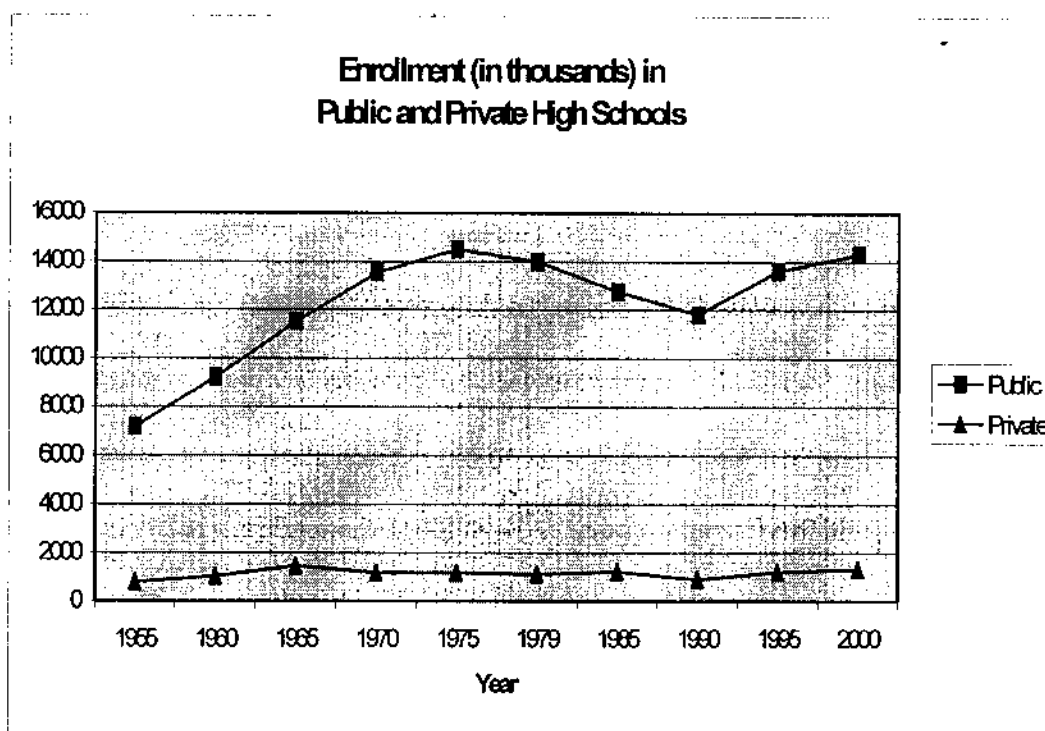


Figure 1. Student Enrollment in Public vs. Private Schools. U.S. Census Bureau (2001).

#### School Enrollment of the Population. Table A-1.

In the 1980's, there was a resurgence in the establishment of Afrocentric and religious schools to meet the needs of African American parents who had lost faith in public schools (Austin-Lucas, 1992). This trend continued a history of commitment to education demonstrated since the time of the Revolutionary War when private schools were first established by free persons of color (Hoit-Thetford, 1986). The first black private school was established in Boston in 1798. Today there are more than 400 African American independent schools in the United States (Parker-Gills, 1999).

Since the *Elementary and Secondary School Act* was passed in 1965, bold initiatives have spearheaded national school reform. Support for busing to achieve racial balance in the nation's schools was sparked by James Coleman's 1966 report *Equality of*

*Educational Opportunity* that found black children performed better academically in integrated schools (Kiviat, 2000). Ten years later, Coleman reported that busing did not provide the expected improvement in student achievement and racial balance in schools due to “white flight” to suburban neighborhoods and schools (Kiviat, 2000; Ruenzel, 1994).

*A Nation at Risk*, issued by federal commission in 1983, “gave credibility to the claim that a crisis in education existed” (Fowler, 2000, p. 182). The Commission on Minority Participation in Education and American Life announced in their 1988 report, *One Third of a Nation*, that the gaps that exist between minority and majority groups in education, employment, income, health and longevity threatened to compromise the quality of life in the United States (Miller, 1995). In 1994, under the Clinton Administration, *Goals 2000*, also known as the *Educate America Act*, championed “systematic changes needed to ensure educational opportunities and high levels of educational achievement for all students” (U.S. Congress, 1994). The Act established educational goals to be achieved by the year 2000 that addressed such factors as school readiness, mathematics and science achievement, teacher preparation and professional development, and parental participation. While all of the objectives of *Goals 2000* were not met, many believe the document has helped to stimulate public education reforms (Rothstein, 1999).

Highly publicized “failing schools” and “state take-overs” of local school boards reinforced the public’s perception that academic standards in public schools were on the decline during the nineties. The educational standards and testing movement that began during this period highlighted disparity in instruction and educational achievement across

the different student groups in American public schools. Consequently, there has been public demand for higher educational standards and more accountability by school boards, administrators and educators.

As previously stated, the *Elementary and Secondary School Act* was reauthorized as the *No Child Left Behind Act* in January 2002. The Act calls for the creation of smaller schools, an increase in the quality of teachers, and a decrease in class size to “help close the achievement gap between disadvantaged and minority students and their peers” (U.S. Department of Education, 2002 March 20).

### Demographics

In 1999 there were 27,233 private schools (U. S. Dept. of Education, 2001-034). Thirty percent of private schools were combined elementary and secondary schools and nine percent were dedicated to secondary grades only. An estimated 806,639 students attended secondary private schools and 1,524,672 attended combined elementary and secondary private schools (U. S. Dept. of Education, 2001 c).

Nearly half of the eighth and twelfth graders attending private schools were enrolled in Catholic schools during the 1999-2000 school year. Nearly 8 percent of Catholic school students, 11 percent of nonsectarian school students and 10 percent of students in other religious schools are black (U. S. Dept. of Education, 2002). As displayed in figure 2, approximately 30 percent of private schools are Catholic, 22 percent nonsectarian, and 50 percent are classified as other religious schools (U.S. Dept. of Education, 2001 c). The National Center for Education Statistics classified 43.9 percent of secondary private schools as Roman Catholic, 27.9 percent nonsectarian and 28.3 percent are designated as “other religious”.

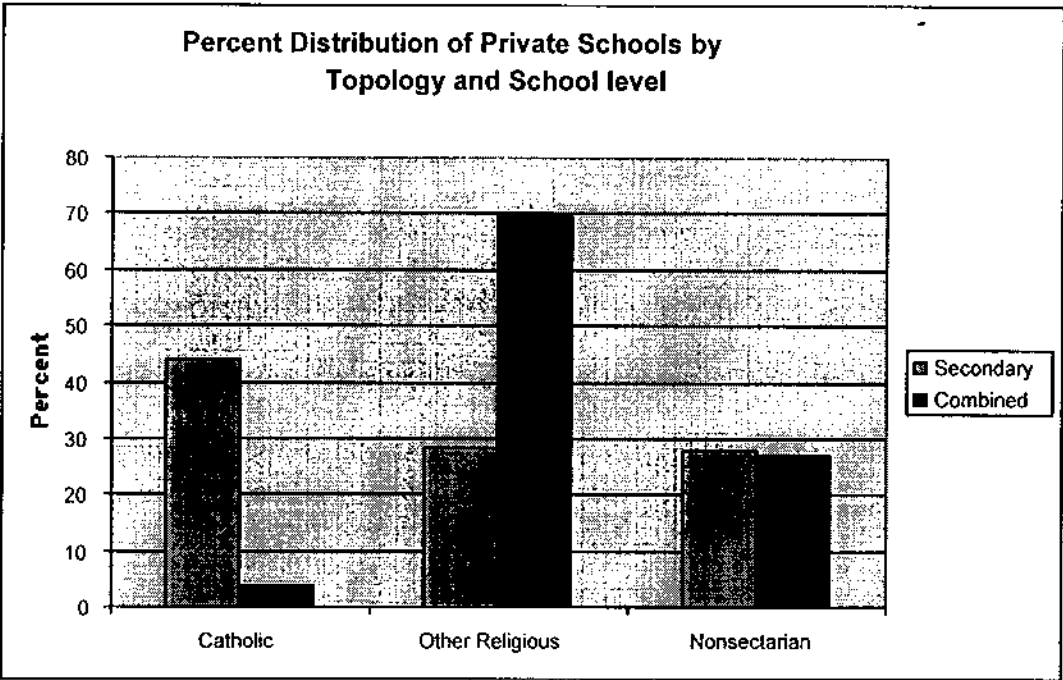
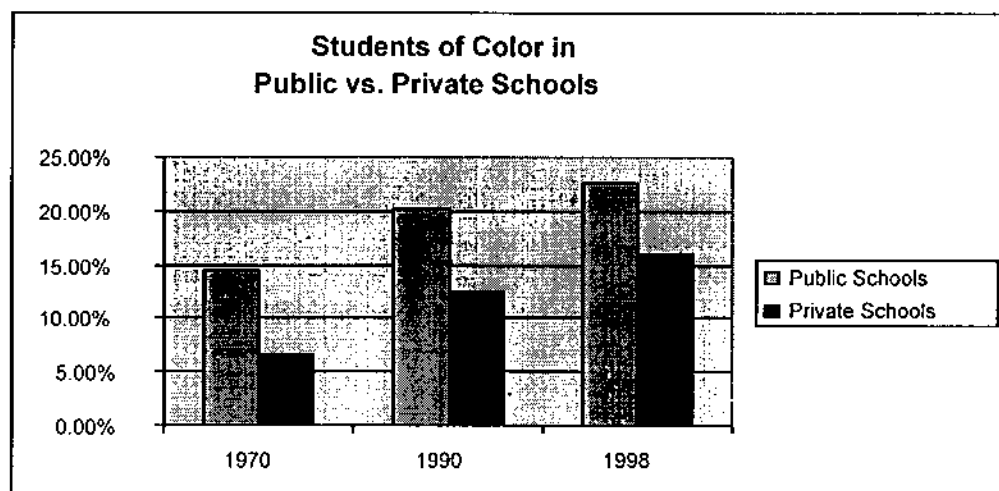


Figure 2. Percent Distribution of Private Schools by Topology and School Level.

National center for Education Statistics, Private School Survey 1999-2000

An estimated 93 percent of secondary private schools offer regular secondary programs, 2.6 percent have a special program emphasis, 1.2 percent special education, and 2.9 percent of secondary private school offer alternative school programs. Of the students enrolled in regular elementary or secondary private schools, 78 percent are white and 9 percent are black. 63 percent of the students enrolled in private schools with special education programs are white, 24 percent are black (U. S. Dept. of Education, 2001 August b).

Between 1970 and 1998 the percentage of students of color in public schools increased from 15.5% to 22.6% (U. S. Dept. of Education, 2001 c). During the same period, the percentage of students of color in private schools increased from 6.6% to 16.1% (U.S Census Bureau, 1998). See figure 3 below. Approximately 23% of private school students are members of an ethnic minority group according to the U.S. Dept. of Education (U. S. Dept. of Education 2001-330).



*Figure 3. Students of Color in Public vs. Private Schools. U.S. Department of Education (2000).*

Overall 9.4 percent of private school children in the United States identified themselves as non-Hispanic blacks; 7.8 percent of secondary school students and 8.7 percent of the students in combined elementary and secondary schools are identified as non-Hispanic blacks.

A study conducted by the Brookings Institute found “private school students are less racially isolated than their public school peers” (Peterson & Greene, 1998). B. D. Tatum found “public schools are more racially segregated [today] than they were 20 years ago” (Caire, 2002). While about 15 percent of private schools had no minority

students, on average minority students comprised 25 percent of a private school's student body.

Former President of the National Association of Independent Schools (NAIS), Peter Relic, expressed concern that private schools have earned a reputation for being less diverse than public schools. Relic stated that "Often private schools are more diverse than neighboring public schools, because independent schools reach out to the entire community whereas the public school population is often determined strictly by geographic boundaries" (CAPE, 2001, p. 9). Musaka (2002) reports that the availability of income tax credits, financial aid and scholarship funds, has helped to integrate private schools, making them more diverse than the public may imagine. In fact, the Harvard University Civil Rights Project found in 2000 that American public schools are more racially segregated than they were 20 years earlier (Caire, 2002).

The National Association for Independent Schools represents 1100 independent schools, approximately 4 percent of the private schools in the United States. For the 2000-2001 school year 16.8 percent of the students in NAIS member schools were students of color. During the 2001-2002 school year, the enrollment of students of color increased to 19 percent (Galinda, n.d.). Blacks are the second largest minority group attending independent schools. As figure 4 reflects, the largest minority group, Asian Americans, comprise 7.7 percent of the independent school student body compared to 5.5 percent African Americans. Detailed data regarding enrollment, distribution of minorities, tuition, teacher salaries, and staffing are only available to authorized members of the National Association of Independent Schools (NAIS, 2002).



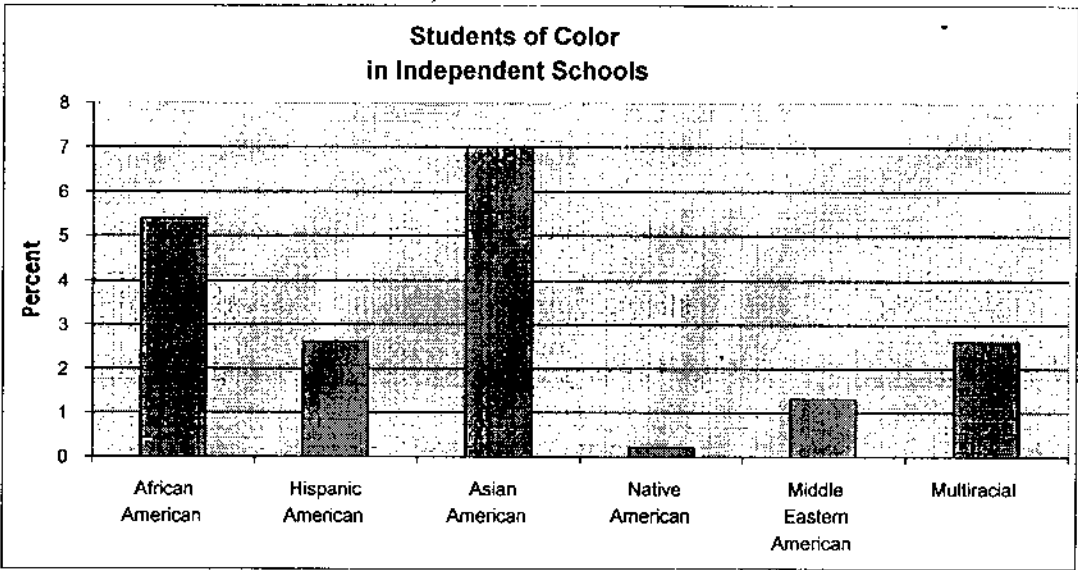


Figure 4. Students of Color in Independent Schools. National Association of Independent Schools (2001)

In contrast, figure 5 shows while the minority student population in independent schools has increased, the number of teachers of color has not kept pace. Between 1987 and 1998 the percentage of faculty of color in independent schools had increased from only four to nine percent (Kane & Orsini, 1998). As reflected in figure 5 below, in 1994 only 12% of public school teachers and 6.5% of private school teachers were non-white (U.S. Census Bureau, 2002).

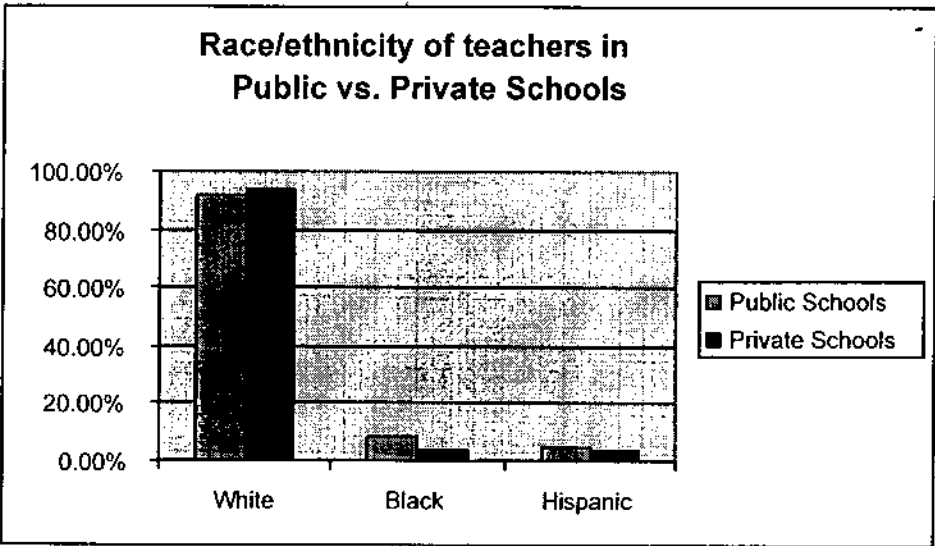


Figure 5. Race/ethnicity of Teachers in Public vs. Private Schools. U.S. Department of Education, Table 68, 1993-1994

Socioeconomic Factors

The U.S. Census Bureau’s historical household income tables show the mean income for blacks in 1994 was \$29,259 and the median was \$21,027. The mean income of white households in 1994 was \$45,034 and the median was \$34,028. Six years later the mean income for black households had increased \$10,000 to \$39,178, however, the median income increased by only \$8,000. By comparison, the mean income for whites increased by nearly \$15,000 to \$59,254 and the median income by nearly \$10,000 to \$43,916. See figure 6 below.

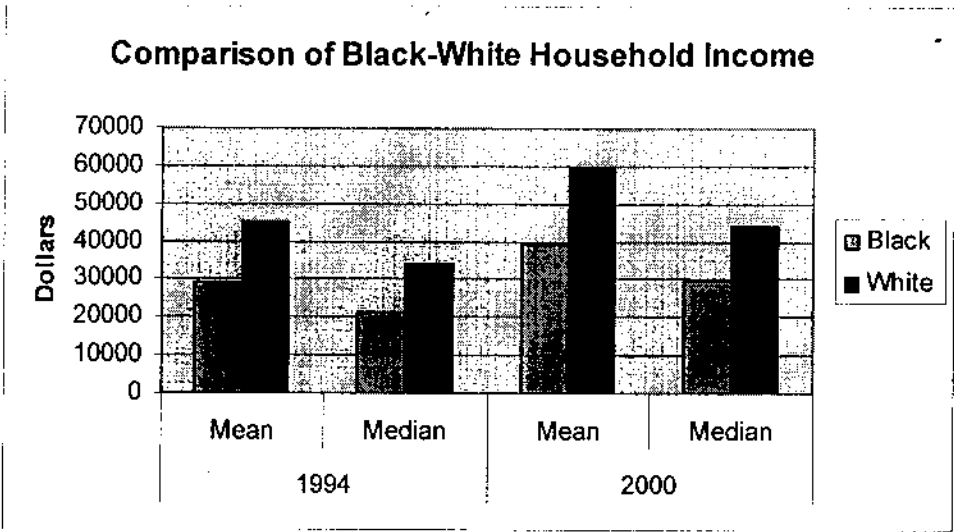


Figure 6. Comparison of Black-White Household Income. U.S. Census Historical Income Tables (2001). Table H-S Race and Hispanic Origin of Householder 1967-2001

Many believe that attending private schools is a privilege for the more affluent. The Council for American Private Education (2000) however, reports over 80 percent of school age children who live in families with household incomes of \$75,000 or more actually attend public schools. Less than 13 percent of black households in 2000 earned more than \$75,000 compared to 25 percent of white families (U.S. Census Bureau).

In 1994 the average tuition for private secondary schools was \$3,643 at Catholic schools, \$5,261 at other religious schools, and \$9,525 at nonsectarian schools (U. S. Dept. of Education, 2001). By comparison, *Money Magazine* (1994) reported the average tuition at nonsectarian private schools in \$9500, Christian schools was \$4200, Catholic schools \$3500, and other religious schools \$10,500. The National Association of Independent Schools reports the median tuition for secondary day schools was \$13,420 for the 2000-2001 school year increasing to \$14,164 for the 2001-2002 school year. The

average financial aid grant for students was \$8,947. The cost for independent boarding schools is approximately double the day school tuition.

The African American families that choose to send their children to private schools generally are lower middle class families. Fifty percent of the African American families who chose to send their children to private schools earned an average total income of \$30,000 (Tolpolnicki, 1994). Based on an average total household income of \$30,000, private school tuition can account for 12 to 35 percent of an African American family's earnings.

Correlations between socioeconomic status and academic performance have been identified; however, achievement differences across ethnic groups exist within each socioeconomic level (Camara & Schmidt, 1999; Orr, 2000). Lai (1997) found teacher expectations, track assignments and socioeconomic status effects the academic achievement of African American students. Analysis of the 1998 National Educational Longitudinal Survey (NELS) results show that the average reading score of African Americans in the highest socioeconomic category was below the average reading score of white students in the middle socioeconomic category (Camara & Schmidt, 1999).

#### School and Class Size

Cotton (2001) writes that successful high schools have an enrollment of between 200 and 400 students with a maximum of 500 students. The average enrollment for public secondary schools for the 1999-2000 school year was 706 students, nearly half of public secondary schools had enrollment of 500 or more students and twenty-five percent had more than 1000 students (U. S. Dept. of Education 2002). By contrast, approximately

88 percent of non-sectarian private schools, 62 percent of Catholic schools, and 88 percent of other religious schools had an enrollment of less than 300 students (U. S. Dept. of Education, 2001 August b). Nearly 77 percent of private secondary schools have less than 500 students and more than 60 percent have fewer than 300 students (U. S. Dept. of Education, 2001 August b).

Most adults believe that private schools are better equipped to provide students with individual attention and more committed to offering smaller class sizes than public schools (CAPE, 2001). Many equate smaller class size and individual attention with higher quality education. The National Black Caucus recommends public school districts "finance programs that limit class size to 15 students" (Borja, 2001).

The Council for American Private Education (2000) reports that eighty percent of private schools are classified as "small" with enrollment of less than 300 students. From 1960 to 1999, the pupil/teacher ratio in private secondary schools decreased from 18.6:1 to approximately 11.5:1 while the pupil/teacher ratio in public secondary schools decreased from a high of 21:1 to approximately 14.1:1 (U. S. Dept. of Education, 2001 c). Catholic schools, however, tend to have larger classes on average than public schools. The average class size in Catholic schools was 20-30 students, while public schools had classes with 11 to 20 students (Topolnicki, 1994).

Studies support the premise that class size reduction to 15-20 students in leads to improve student achievement especially for minority and disadvantaged students (Hopkins, 1999). Krueger and Whitmore (2001) found decreasing class size had a positive affect on standardized test results for black and white students. Their findings indicate that "while students are in small classes, average test scores increase 7-10

percentile points for black students and by 3-4 percentile points for white students. After students return to regular size classes ... the gains...fall to about 5 points for black students and 1.5 points for white students.”

Krueger and Whitmore (2001) assert that reducing class sizes in grades K-3 will narrow the black-white achievement gap by 38 percent and by 15 percent in subsequent grades. The researchers attributed much of the narrowing of the black-white test score gap during the seventies to the national movement towards smaller classes. Krueger and Whitmore (2001) conducted further research and found decreasing class size has a positive affect on black students’ decision to take the ACT or SAT as well as their performance on the examinations.

### Teacher Quality

An *Education Week* survey of registered voters (Deily, 2002) found that Americans believe improving teacher quality is the “number one way” to improve the quality of schools. Education Secretary Paige (National Council of Teachers of Mathematics (NCTM), 2002) affirms this belief and has challenged districts to insure that “all teachers hired for the fall of 2002 demonstrate knowledge of the subject area they will teach and that all others be highly qualified by the end of the 2005-2006 school year” (p. 9).

In 1999, 47.3 percent of public school teachers held Masters degrees or higher compared to 34.4 percent of private school teachers (U.S. Bureau of Census, 2000). Private school teachers, however, are more likely to hold doctoral degrees than public school teachers (U. S. Dept. of Education, 2001 c) as figure 7 indicates.

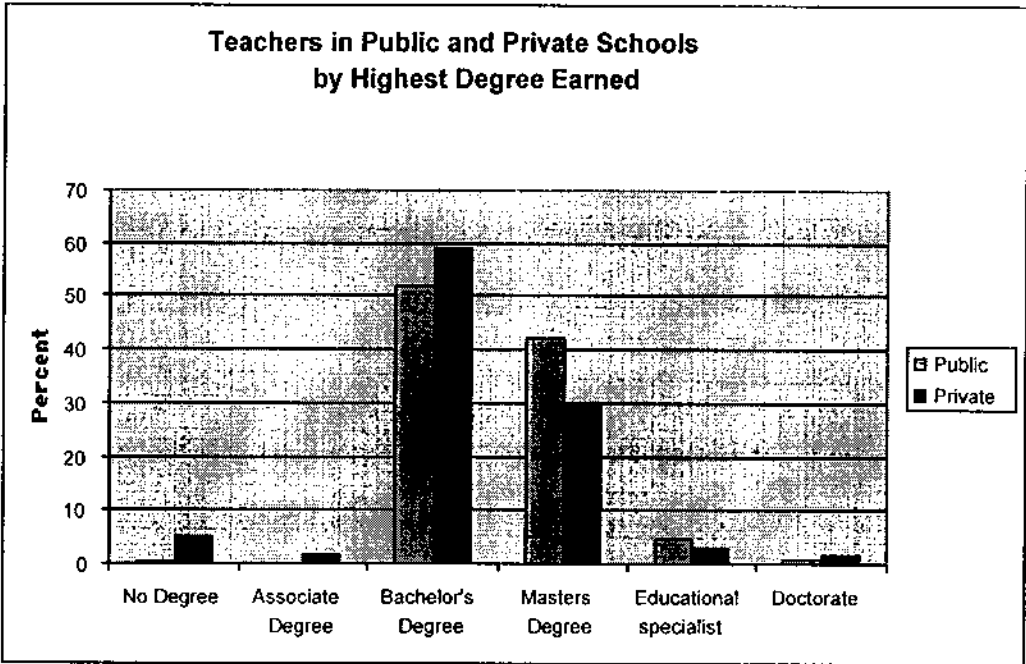


Figure 7. Teachers in Public vs. Private Schools By Highest Degree Earned. U.S. Department of Education, National Center of Education Statistics (2002)

Forty-five percent of public school mathematics teachers held Masters Degrees compared to 43 percent of private school mathematics teachers (U.S Dept. of Education, 2002). Private school teachers were more likely, however, to hold doctorates in their field than their counterparts in public schools. Less than 1 percent of public school math teachers had earned their Doctorates compared to 2.2 percent of private school mathematics teachers. Similarly, only 1.2 percent of public school teachers held doctoral degrees in science compared to 4 percent of private school science teachers (U. S. Dept. of Education, 2002).

### Teacher Expectations

Research has shown a correlation between student achievement and teacher expectations (Lumsden, 1997; Northwest Regional Educational Laboratory, 2001 a). Research conducted by the Education Trust found teachers in high poverty and high minority schools give fewer assignments and have low expectations for student performance on their assignments (Heylock et al, 2001). Parents find private school teachers have higher expectations for students and require more work of their students (Norris, 2002). Private school teachers and administrators require more communication between home and school and work to develop relationships with students and their families (Ruenzel, 1994).

Massey, Scott, and Dornbusch (1994) found that black students received more praise than white students did although they did less work in class. This practice of issuing unwarranted praise has been described as “soft discrimination” and, according to the researchers, affects all students in the classroom. The praise is viewed by white students as unfair and reinforces a lower standard of performance for black students (Ruenzel, 1994).

Teachers’ perceptions, positive racial attitudes and expectations influence black students’ academic achievement and self-image (Forehand, Regosta & Rock, 1976; Garrett-Holiday, 1985). Ferguson (2002) found black students tend to care more about what teachers think about them than white students. Ferguson also points to his anecdotal findings that black students that “would prefer to look lazy than to look stupid.” Ferguson’s analysis is supported by NAEP data that suggests approximately one



out of two black students in public schools understands what is going on in their classroom. For example, 48 percent of black students compared to 27 percent of white students reported that they understand what the teacher is teaching less than half of the time. Similarly, 55 percent of black students compared to 30 percent of white students reported that they understand what they read less than half of the time. Positive feedback and close attention from teachers may pay higher dividends for black students than white students.

#### Academic Achievement

Although the high school graduation rate for African American children has improved, black-white disparities persist with other measures of educational achievement. Camara & Schmidt (1999) report African Americans had a lower average high school GPA than Asian Americans, Hispanics and white students. In addition, the average AP score for African American students in 1996 was the lowest among all reported ethnic groups. Referring to data collected from 1997 college-bound SAT takers, “according to their self-reported class rank, white and Asian American students are twice as likely to be in the top 10 percent of their high school class as African Americans” (Camara & Schmidt, 1999).

While controversial, national and state standardized tests are key measures of academic achievement for school children. The National Center for Educational Statistics (U.S. Dept. of Education, 2001 d) has found that “even for children with similar test scores one or two grades earlier, blacks generally scored lower in mathematics and reading than whites.” The gap exists at every grade level and the gap in mathematics

achievement widens as students move from elementary to secondary school (U. S. Dept. of Education, 2001 d).

White students have outperformed all minority groups, with the exception of Asian Americans, on most standardized assessments. One-third of the school age population in 1995 was a non-Asian minority, however only 5 percent of non-Asian minority students earned more than 1200 on their SAT's and only 3 percent earned more than 1400 (Miller, 1997). In 1998, for example, white students averaged 528 and 526 on the SAT math and verbal sections, respectively, while African American students averaged 426 and 434 on the SAT math and verbal sections (Camara & Schmidt, 1999).

Correlations between parent education level and academic performance have been found, however, there are notable achievement differences across ethnic groups within parent education level. In 1998 the average SAT math score for white students whose parents had not graduated from high school was 516, four points higher than the mean SAT math score of African American students whose parents had completed some graduate school or held a post-baccalaureate degree. The average SAT verbal score for white students whose parents had only earned high school diplomas was 531, two points higher than the average SAT verbal score of African American students whose parents had completed some graduate school or held a graduate school degree (Camara & Schmidt, 1999).

Ferguson (2002) found that parent background and availability of resources may explain some of the disparities in achievement between black and white students. Ferguson reported that on average black students begin kindergarten less prepared than

their white classmates. Black children have “fewer books at home and have a lower sense of ordinality” (Ferguson, 2002, presentation).

After steady increases in NAEP scores for black students during the seventies, their scores began to decline during the late eighties. Ferguson (2002) theorizes the decline is tied to the rise of hip-hop music in America in 1986. “[Black] kids traded in books for head phones” enthusiastically embracing the new genre of music with its controversial lyrics, subjects and performers (Ferguson, 2002, presentation). Furthermore, he believes the music had a greater impact on black students than white children because black students found a sense of identity in hip-hop music, while white students viewed hip-hop only as entertainment. For many students, time spent reading outside of the classroom has been usurped by television viewing and listening to music. Completion of homework while listening to music is also commonplace.

Several studies have tracked low-income and minority students who have moved from public to private schools under voucher programs (Peterson & Howell, 2001; Keith, 1982). For example, Peterson and Howell (2001), found that the Iowa Test scores of African American students in New York City, Dayton, Ohio and Washington, D.C. who moved from public school to private school improved by one-third of a standard deviation relative to their public school peers. Keith (1982) learned that minority students perform better in Catholic schools. Similarly a New York University study found that “student achievement gaps by race and family income are narrower in Catholic schools.” (CAPE, 2001)

Critics argue that the “selection effect” must be taken into account when analyzing the positive affects of private schooling (Tolpolnicki, 1994; Peterson &

Greene, 1998). Critics (Caire, 2002) argue that measuring private schools' ratings must be tempered with the fact that, unlike public schools, students in private schools attend on an application basis. Private school scores, they argue, should be higher given the ability to select and attract the best and brightest children to attend their schools (Peterson & Greene, 1998).

#### Access to Advanced Courses

The U.S. Department of Education (1991) reports an increase in the enrollment of black students in Advanced Placement courses; however, there is evidence that the enrollment is reaching a plateau (NBCSL, 2001). Studies in Shaker Heights, an integrated middle class suburb, found that despite equal enrollment of black and white students, black students were the majority in courses within the lower academic tracks, yet they comprised only 10 percent of Advanced Placement courses (Singham, 1998).

The National Center for Education Statistics reports only 25.6 percent of blacks students take college preparatory courses compared to 42.1 percent of Asian-American and 34.1 percent of white tenth graders (Borja, 2001). The College Board found (1999) that students of all racial and ethnic backgrounds, who took higher level math and science courses, such as physics, precalculus, and calculus, achieved higher SAT scores. Caperton (College Board, 1999) stated "Urgent steps must be taken to increase the access of minority and low-income students to high quality K-12 education. This means radically improving curricula, teacher training, and accountability in all schools - elementary through high school." This achievement or "opportunity gap" narrows as students, regardless of ethnicity, take more rigorous courses (College Board, 2001).

Catholic schools offer fewer AP courses than the average public school and other private schools. The best public schools offer as many AP courses as elite public schools (Topolnicki, 1994). This head to head comparison may be meaningless given the current debate over the merits of the AP course system. Many top private schools are opting to disband their AP courses as colleges and universities acceptance of AP courses for credit has declined. Many high schools are becoming more uncomfortable with courses tied to a standardized test and prescribed course curriculum.

Bronkhurst (1996) study found that "counselor bias" was a barrier to minority student's access to advanced placement classes. Lucas (1991) studied high school sophomores to reassess earlier research that indicated that tracking had a positive effect on the black-white achievement gap. Lucas (1991) found no evidence that track assignment effects achievement and "no direct effect of race on achievement within tracks" (p. 37).

#### Educational Attainment

During the past decade, dropout rates have declined and many states have experienced increases in achievement scores for minority children. The U.S. Census Bureau (1998) reported that the high school graduation rate of African Americans had increased in 1997 indicating that the gap between black and white students' educational attainment was narrowing. This convergence of graduation rates along racial lines is attributed to the increase in high school completion rates among parents of African American children (U.S. Dept. of Education, 2001 d).

Private secondary and combined elementary and secondary schools reported a 98.8 and 97.8 graduation rates respectively for the 1998-1999 school year (U. S. Dept. of Education, 2001 d). The U.S. Department of Education Statistics (2001 August b) reports private schools with 20-49 percent minority enrollment had a 97.7 percent graduation rate and 90.2 percent college application rate. Private schools with 50 percent or more minority enrollment had 96.5 percent graduation rate and 79.9 percent college application rate. In contrast, public schools with 50 percent or more minority enrollment had 90.1 percent graduation rate and 54.2 percent college application rate.

### Choosing Private Schools

African American parents are choosing to send their children to integrated and all-black private schools for reasons different than white parents (Ruenzel, 1994). Per Lee (1994) found that white parents choose private schools as a leverage tool for their children's future college and career aspirations, while black parents' choice is motivated by their desire to provide a safe school environment for their children. Parents of black students choose private schools because they are worried about gangs and their children's general safety (Jonsson, 2001). Parents find private schools offer smaller classes, more personal attention, a safer environment and "less cheating, fighting, property destruction and chaos" (Per Lee, 1994; Peterson & Wendland, 2001; Norris, 2002).

Gholson-Driver (2001) investigated the factors that influenced minority parents' decision to send their children to private schools. Gholson-Driver's subjects listed school safety, teacher quality, school environment, teacher involvement, and a strong academic program as reasons why they chose private schools over public schools. While the

majority of the parents in her study enrolled their children in religious schools, they indicated that their choice was not based on a desire for religious instruction. Gholson-Driver's subjects believed academic standards and a consistent academic program were important for their children's academic success. The parents believed their children's grades indicated that they were learning and classroom assessments were more of an indicator of academic achievement than standardized tests.

Black parents also choose African American private schools to meet the cultural and educational needs of their children. African American private schools incorporate spiritual and cultural instruction into their curriculum, employ traditional teaching strategies, emphasize the basics, and stress discipline (Ruenzel, 1994). Delpit (1999) found black students from low-income backgrounds required more basic skills instructions to be successful in school. African American private schools often provide students with a traditional structured environment with an emphasis on the fundamentals – reading, writing and arithmetic.

#### Closing the Achievement Gap

The nation's best public schools are on par with private and parochial schools in terms of course offerings, qualified teachers and student achievement (Topolnicki, 1994). A large majority of African American students, unfortunately, do not attend the best public schools. The average African American student attends a school in poor districts where resources are lacking.

The College Board's National Task Force on Minority Achievement published a report under the direction of L. Scott Miller in 1999. The task force called for

“affirmative development” to “improve minority education from preschools to universities” (Kohen, 1999, p. 3). Affirmative development strategies include the contributions of educators from elementary to university levels, parents, community resources, and educational researchers.

Narrowing the achievement gap between black and white students has become a major part of the national political agenda. College Board President Gaston Caperton (College Board, 2002 b) categorizes the black-white educational achievement gap as a national security threat. Recent legislature requires schools to develop “plans to close racial and income-based achievement gaps” (Jonsson, 2001, p. 6). The Durham Committee on the Affairs of Black People, the Office for Civil Rights at the U.S. Department of Education, the NAACP and the Black Caucus are just a few of the organizations urging school boards to “focus all resources on solving the achievement gap problem - even at the expense of suburban kids” (Jonsson, 2001).

In a policy brief addressing racial and ethnic trends in America, the National Research Council (2001) wrote: “Despite real progress in recent decades in closing gaps between ethnic majority and minority populations, there remains troubling disparities in many areas. Race and ethnicity continue to correlate strongly with well-being in America. “

Under the direction of U.S. Secretary of Education Rod Paige, a partnership has been developed between the Department of Education and the National Council of Negro Women (U.S. Dept. of Education, 2002 March 19). Partnering with African American leaders, celebrities and parents, the initiative for academic achievement plans to publicize the existence of the gap in achievement between African American and white children



and highlight existing programs in schools that have been successful in closing the achievement gap. The "Partnership for Academic Achievement" will develop a television and print media campaign to raise awareness of the crisis in academic achievement and mobilize the African American community to take responsibility for closing the achievement gap (U.S. Dept. of Education, 2002 March 19).

Many educational leaders agree the responsibility for closing the achievement gap must be shared with parents. The National Task Force on Minority Achievement (College Board, 1999 b) urges minority parents to become active advocates for school reform. More research is needed into the ways in which family and institutional supports for education differ is needed (Miller, 1997). Ferguson (2002) recommends specific parenting steps for black parents to improve their children's achievement in schools. These steps include teaching persistence, helping children develop a sense of purpose and racial identity.

In response to charges that standardized testing is racist, Rod Paige stresses the importance of testing and reporting results by race in order to identify and quantify the achievement gap (U.S. Dept. of Education, 2001). U.S. Secretary of Education, Rod Paige, attributed the quote "literacy is the new civil right" to President Bush. Robyn E. Blumner (1999), however, disagrees with leaders within the black community who cite civil rights violations and discrimination as explanations for the achievement gap between blacks and whites. Blumner points to excessive television viewing among black children as a leading cause of lower educational achievement. Like Jencks and Phillips, Blumner sees the educational gap as the linchpin of black-white economic disparities.

Blumner urges the black community to be honest about the problems facing black America and place less blame on white America for these problems.

The National Center for Education Statistics (2001) report on *Educational Achievement and Black-White Inequality* found “for children and young adults with similar levels of prior educational achievement, the educational and economic performance of blacks relative to whites was substantially greater than the performance of blacks relative to whites as a whole.” The findings indicate that disparities between black and white students will be smaller if the levels of educational achievement for the groups are similar (U. S. Dept. of Education, 2001). The National Task Force on Minority High Achievement (College Board, 1999), however, found that “minority students who have done well in high school are often unable to maintain the same high level of academic achievement in college” (p. 3).

A study conducted by the Education Trust found the achievement gap in Texas has been closing for African American and Hispanic students since 1994 (Paige, 2001). A New York City School Choice Scholarship Foundation study found that over a three year period, the nine point gain in standardized test scores for African American students who attended private schools was “enough to erase the so-called achievement gap that persists nationwide between black and white students” (Norris, 2002). A similar study conducted in Washington, D.C., contradicts the findings in New York City reporting no significant differences in the performance of students who switched from public to private schools (Norris, 2002). President Bush’s administration supports private school choice for minority and economically disadvantaged children in failing schools (Paige, 2001).

The College Board's National Task Force on Minority Achievement (1999) recommended "affirmative development" initiatives to increase the numbers of high achieving minority students at all socioeconomic levels. The task force urged educational leaders to make raising minority achievement at the K-12 level integral to high school reform by developing supplementary educational programs for minority students at the PreK-12 levels. Their initiatives also called for access to high-quality preschools for and their parents access to education programs.

The National Black Caucus called for equalized funding, reduced class sizes, higher academic standards and qualified teachers in urban school districts (Borja, 2001). A report from the National Black Caucus of State Legislatures revealed:

disparities in resources available to white, middle-class students and to African American students in high-poverty communities. Black students also have higher rates of placement in special education and expulsion from school, while posting lower scores on measurements of literacy, science and math performance.

## CHAPTER 3

### METHODOLOGY

#### Introduction

The purpose of this study is to investigate the size and characteristics of the achievement gap in private and nonpublic schools. The methodology can be described as a quantitative descriptive study with the population of interest being students enrolled in nonpublic schools. Data has not been collected for this study by survey or interview method. The primary data source for this research effort is the National Center for Education Statistics. The National Center of Education Statistics (U. S. Dept. of Education) has been charged by legislative mandate to “collect, analyze, cross-tabulate, and report, to the extent possible, so as to provide information by gender, race, socioeconomic, limited English proficiency, and other populations characteristics when such desegregated information would facilitate educational policy decision making” (U.S. Dept. of Education, 2002, p. ii).

The resources surveyed as part of this study were identified as a result of an extensive Internet search utilizing available meta search engines. This search uncovered numerous journal articles, dissertations and statistical studies addressing student achievement; however, there was a minimal amount of data focused on nonpublic schools. Most reports and statistical digests examined in the study are free publications

secured via mail order and the databases were available to the public domain under restricted use. Files were imported into Excel for targeted analysis of data subsets and to create tables and graphs to facilitate data analysis. The robust statistical analysis tools, SPSS and AMS software were needed to perform descriptive and inferential analysis of the large National Assessment of Educational Progress (NAEP) data sets.

The National Center for Education Statistics prepares numerous statistical digests including the Digest of Education Statistics and the Private School Universe Survey. Data from these publications provides demographic information used for trend analysis throughout this study. The NCES also administers the National Assessment for Educational Progress (NAEP). Using NAEP data, differences in achievement between black and white students in nonpublic schools, as well as differences between blacks in public and nonpublic schools will be investigated. The NAEP scores' association with several attributes will be analyzed in an effort to identify focus areas for further research and investigation. The NAEP data will be analyzed using statistical inference techniques where applicable. The online analysis tool developed by NCES, and two statistical software tools, SPSS and AM, will be used to facilitate the analysis.

### Data Sources

#### *Digest of Education Statistics*

The Digest of Education Statistics has been issued annually since 1986. The first edition of the *Digest* was prepared in 1962. The *Digest* contains information describing four levels of education in the United States – preschool, elementary, secondary and higher education. The secondary schools included in the *Digest* are 2-year junior high

schools, 2-year senior high schools, 4-year high schools, and 5-year combined junior-senior high schools. The data addresses such areas as enrollment, educational attainment, finances, federal funding, and library resources. For this study, the *Digest* was the primary reference for public and private school enrollment, staff and student data. The information contained in the *Digest* was obtained from “state and federal agencies, private research organizations, and professional associations...The data were collected using many research methods, including surveys of a universe (such as all colleges) or a sample, compilations of administrative records, and statistical projections” (U.S. Dept. of Education, 2001. p. 41).

#### *Private School Universe Survey*

The Private School Universe Survey was used to discover information about the number of private schools in the nation, their student enrollment, teaching staff, size and program emphasis (U. S. Dept. of Education, 2001 b). The U.S. Census Bureau biennially collects this data about private schools for the NCES using a list frame and an area frame were utilized to build the universal list of private schools. The list frame, developed as a result of the initial survey effort in 1989, was updated with input from state, private school associations and available private school guides (U. S. Dept. of Education, 2001 b). An area frame was used to identify schools that may have been excluded from the list frame. An even number of cases was selected from the sixteen strata that comprised the area frame. The strata were designed to insure the selection of private schools from the four geographic regions of the United States, metro and nonmetro states, and schools with enrolment above and below the median. A list frame is used to select the subjects for

the sample. There was a 92.7 percent response rate from the 1,414 private schools included in the 1999-2000 survey (U. S. Dept. of Education, 2001 c).

### *National Assessment of Educational Progress*

Access to the 2000 NAEP data used in this study was arranged through participation in a seminar sponsored by the NCES in June 2002. Participants in the four-day seminar were selected on an application basis. Participants were provided restricted access to grade eight and grade twelve data files as well as use of AM and SPSS software for research purposes.

The National Assessment of Educational Progress (NAEP) database provides information about students, teachers and schools as a population. NAEP data is not valid at the individual student or individual school level. National NAEP data from 1990, 1992, 1996 and 2000 mathematics examinations will be examined as part of the trend analysis effort.

In 1984 the NAEP was redesigned and administered to students in grades 4, 8 and 12. The original NAEP is now known as the "trend NAEP" and the revised 1984 version, is known as the "main NAEP". The main NAEP assesses student achievement in reading, math, science, writing, U.S. history, civics, geography, the arts, and other subjects in grades 4, 8, and 12. The main NAEP has two components, the "national NAEP" which assesses students in grades 4, 8, and 12, and the "state NAEP" which is given to students in grades 4 and 8.

Currently NAEP is administered every four years. The *No Child Left Behind* Act requires that a sample of 4th and 8th graders in every state take NAEP reading and mathematics tests every other year (Olson, 2002 b). Participation on the part of individual

schools and students will remain voluntary; however, distribution of state level Title I funds is tied to participation. NAEP administrators must explain to parents that students are not required to participate in the testing program (Carr, 2002).

The U.S. Department of Educational Statistics will use the 2003 NAEP assessment results as the benchmark for future assessments. The National Assessment Governing Board mandates all states to make “adequate yearly progress” toward the target of 100% of all students receiving a “proficient” rating on the NAEP by the year 2014 (Loschert, 2001). To reduce the burden on the states and to promote uniformity in test administration across the nation, more than 2000 individuals will be hired to facilitate test delivery across the nation in 2003. In the year 2005, the testing force is projected to increase to 3000 (Carr, 2002).

#### *The College Board*

The College Board has been administering the Scholastic Achievement Test (SAT) since 1926 and the Advanced Placement (AP) exam program since 1951. The Scholastic Achievement Test (SAT), originally used by the U.S. Army as an IQ Test, was adapted in the 1930's as a screening tool for Harvard scholarship applicants (PBS, 2001). The College Board, which has been administering the SAT since 1926, reports that more than 2.1 million students took the SAT during the 2000-2001 school year, a substantial increase from its first offering of 8,000 examinations.

Used by 80% of 4-year colleges and universities as part of their admissions process, the SAT is taken by most students during their junior or senior year in high school (College Board, 2000). Research has found that the combination of a student's



GPA and his/her SAT score is a good predictor of academic performance in college. Each student must pay a \$26 fee for the examination. Fee waivers are available on an application basis for students with a demonstrated financial need.

The concept of an Advanced Placement program was conceived in 1951 as part of a Ford Foundation education program. The College Board's Advanced Placement Program has grown from approximately 2000 examinations administered in 1956 to more than 1.4 million in 2001. Over 3000 colleges accept AP examination grades and 13,680 high schools participated in an AP examination program during the 2000-2001 school year. Twenty-eight percent of the 800,000 students who took AP examinations in 2001 identified themselves as ethnic minorities. Four percent of the test takers identified themselves as African American (College Board, 2002).

The College Board currently offers 35 examinations in 19 subject areas. Most examinations cost \$78 and are three hours in duration. In the area of mathematics, there are three examinations: AP Calculus AB, AP Calculus BC, and AP Statistics. The examinations are graded on a 5 point scale with a score of 3 or better generally accepted by colleges for advanced placement or course credit (College Board, 2001). The examinations generally consist of a multiple choice and free response section.

#### Data Sample

The NAEP sample is a complex stratified probability sample (Sedlacek, 2002). First, a sample of states is drawn from the United States and its territories, second a sample of schools is drawn from these states. Next, a sample of students in grades 4, 8 or 12 is then drawn from the selected schools. Subgroups, such as ethnic minorities, are

oversampled to compensate for possible under representation within the final sample. To account for their potential under coverage within the sample, non-public schools were oversampled during the 2002 assessment (Sedlack, 2002).

According to the National Center for Education Statistics, approximately 2500 students from 100 schools are selected to create each state's sample for the NAEP. A sample of schools from each state is then selected to represent the nation's diverse student population (U.S. Dept. of Education, 2001, Nov. 19). While state-level participation in the NAEP is voluntary, individual schools may be selected for the national sample regardless of their home state's participation status. The schools that comprise this national sample are drawn from the "public and nonpublic schools and four regions of the country, as well as sex, race, degree of urbanization of school location, parent education, and participation in the National School Lunch Program" (U.S. Dept. of Education, 2001, Nov. 19).

Approximately 16,000 students in grade eight and 13,000 students in grade twelve participated in the NAEP 2000 mathematics assessment (Table 1). Since individual scores are not reported and participation is voluntary, the response rate for the 12<sup>th</sup> grade in 2000 was relatively low (Carr, 2002). The student participation rate for students in grade eight was 92 percent and 77 percent for grade twelve compared to 96 percent for grade 4. The school participation rate for grade eight was 85 percent and 82 percent for grade twelve compared to 89 percent for grade 4 (U. S. Dept. of Education, 2001 a).

Table 1

*Total Number of Students Assessed for the 2000 Mathematics NAEP Assessment by School Type*

<i>Grade</i>	<i>Public Schools</i>	<i>NonPublic Schools</i>
Eight	9,389	6,305
Twelve	6,874	6,558
Total	16,263	12,863

Note: National Center for Education Statistics (2001)

Table 2 summarizes the distribution of schools included in the grade eight and twelve samples by the type of community where the school is located as defined by the U.S. Census Bureau. Only 12% of the nonpublic schools in the grade eight sample were located in small, rural towns with the remaining schools in the subgroup equally divided between central cities and large towns on the urban fringe. Of the nonpublic schools included in the grade 12 sample, 51% were located in central cities, 39% in large towns on the urban fringe and 10% in small, rural towns.

Table 2

*Nonpublic and Public School Sample Frequencies for the 2000 Mathematics NAEP Assessment by School Location*

<i>Grade 8</i>	<i>Public</i>	<i>Private</i>	<i>Catholic</i>
Central City	86%	7%	8%
Urban Fringe/Large Town	91%	4%	6%
Rural/Small Town	93%	3%	2%
<i>Grade 12</i>	<i>Public</i>	<i>Private</i>	<i>Catholic</i>
Central City	84%	6%	11%
Urban Fringe/Large Town	93%	3%	4%
Rural/Small Town	96%	3%	1%

Note: National Center for Education Statistics (2001)

The NAEP Data ToolKit Version 1.7 was used to create an SPSS extract file from the NAEP 2000 Mathematics database to generate the Grade eight and 12 files for

analysis. Appropriate weights were applied to the sample data in order to draw justifiable conclusions about the student population. For the Grade eight weighted sample, 90.9 percent of the cases on the data file were drawn from public schools and 9.1 from nonpublic schools. Approximately 10 percent of the nonpublic schools in the sample were members of the NAIS.

Using the AM software, appropriate weights were applied to the sample data in order to draw justifiable conclusions about the student population. Approximately 93% percent of the public school cases and 99% of the nonpublic school cases were included in the analysis. While responses were categorized into the six race classes, only the responses of black and white subjects are used for analysis in this study. Table three reports the frequencies of each case by race for public and nonpublic schools in the weighted sample are as follows:

Table 3  
*Grade 8 Weighted Nonpublic and Public School Sample Frequencies*

<i>Nonpublic Schools</i>	<i>Frequency</i>	<i>Percent</i>
White	274,945	78.5
Black	29,283	8.4
Hispanic	29,277	8.4
Asian	11,471	3.3
American Indian	3,802	1.1
Unclassified	1,455	.4
Total	350,233	100.0
<i>Public Schools</i>	<i>Frequency</i>	<i>Percent</i>
White	2,271,944	65.1
Black	492,043	14.1
Hispanic	526,155	15.1
Asian	134,548	3.9
American Indian	60,105	1.7
Unclassified	4,579	.1
Total	3,489,374	100.0

Note: National Center for Education Statistics (2001)

For the Grade twelve weighted sample, 91.4 percent of the cases on the data file were drawn from public schools and 8.6 from Nonpublic schools. The frequencies of each case by race for public and nonpublic schools in the weighted sample are reported in Table 4 below:

Table 4

*Grade 12 weighted nonpublic and public school sample frequencies*

<i>Non-public Schools</i>	<i>Frequency</i>	<i>Percent</i>
White	227,894	81.5
Black	19,267	6.9
Hispanic	20,645	7.4
Asian	9,318	3.3
American Indian	1,310	.5
Unclassified	1,312	.5
Total	279,746	100.0
<i>Public Schools</i>	<i>Frequency</i>	<i>Percent</i>
White	2,050,936	68.9
Black	435,383	14.6
Hispanic	333,616	11.2
Asian	133,909	4.5
American Indian	19,625	.7
Unclassified	3,803	.1
Total	2,977,272	100.0

One of NAEP’s background questions asked students whether they felt it was important to perform well on the assessment. Sixty percent of the eighth grades and only 28 percent of the twelfth grades agreed that it was important to do well on the assessment (U. S. Dept. of Education, 2001 a). These results may indicate the limited validity of the NAEP as a predictor of student motivation and achievement.

The NAEP assessment is administered using a balanced incomplete block (BIB) method (Carr, 2002). The assessment consists of multiple choice and open-ended items. Cross Block Items (CBI) are items that appear on the assessment for more than one

grade. Since a single test has more items than can be completed by a single student in one testing session, multiple students take portions of the complete assessment. More than 700 students respond to a single item within the complete assessment (Carr, 2002).

The NAEP Mathematics assessment addressed five strands of mathematics content and targeted multiple levels of mathematical abilities and power (U. S. Dept. of Education, 2001 a). The test's design included questions to measure a student's conceptual understanding, procedural knowledge and problem solving ability as well as his/her reasoning, connections, and communications power (U. S. Dept. of Education, 2001 a).

### Data Analysis Tools

The NAEP Data Tool v.2.0 is available on the National Center of Educational Statistic's website for online access to tables of detailed results from the national and state assessments (U.S. Dept. of Education, 2001). Summary student, teacher and school statistics for 1990, 1992, 1996 and 2000 testing cycles are accessible via the online tool.

AM Statistical Software is a data analysis tool developed by Westat Corporation based in Rockville, Maryland. The AM statistical software was developed to aid the National Center for Education Statistics with analysis of large data sets such as the High School Transcript Survey or NAEP test results. AM reads files exported from SPSS. The software may be used to conduct t-tests and regression analysis with user selected variables.

SPSS (Statistical Package for the Social Sciences) is a data management and analysis product developed by SPSS, Inc. The tool can create scatter plots and frequency charts useful for descriptive statistics. SPSS also performs inferential and multivariate

statistical procedures (SPSS, 2002). SPSS will be used for univariate descriptive analysis of the NAEP data file. Microsoft Excel will also be used to create graphical representations of the data.

#### Data Analysis Method

This study's quantitative data analysis will incorporate inferential and descriptive statistics. Inferential statistics enables the researcher to draw conclusions about the population based on results from sample data. SPSS, AM software and the NAEP online data tool will be used to carry out the t-test for inferential statistical analysis.

Descriptive statistics are used to illustrate the associations between variables in the study (Hopkins, 2000). Summary statistics and graphical representations of the data will be created using SPSS and Excel software. Frequency distribution tables and histograms will be created to highlight possible relationships between race, school type and the other variables under study. These variables include: number of types of reading material in student's home, NAEP achievement level, hours spent doing homework, teacher expectations for student achievement, parental expectations for student achievement, and advanced math courses completed.

Statistical tests were conducted to determine if the mean mathematics test scores are different for the groups under the study. Inferential testing will also be used to determine if the proportions of select characteristics occur at the same rate within the groups. The inferential testing methods used are the one and two-sample t-test, confidence intervals and the chi-square test of homogeneity.

Two sample t-tests will be used to determine whether the mean NAEP scores of black and white students in public, nonpublic and private schools are statistically

different from each other. The formula for the t-test is the ratio of the difference between the two means and the standard error of the differences. The denominator, the standard error or standard deviation, is a measure of the variability of the NAEP scores. The t-test allows analysts “to judge the difference between their means relative to the spread or variability of their scores” (Trochim, 2000).

The NAEP online data tool, AM statistical software and the TI-83 calculator will be used to compute the t-test statistic, degrees of freedom and associated p-value when manual computations are cumbersome. A positive t-value indicates the first mean in the test is larger than the second and a negative value indicates it is smaller. Chi-square test statistic is also used for inference testing. The Chi-square test statistic is used to conduct a test of homogeneity to determine if proportions of select characteristics differ within the groups under study (Triola, 2001). The significance level, alpha, is set at .05 for both the t-test and Chi-square test analysis.

#### Data Analysis Issues

The inferential analysis performed throughout this study will use averaged data. Since averages are more normal and less variable than individual observations, results of these analyses must be interpreted with caution as correlation based on averages are often higher than expected (Yates et al, 1999).

Bracey (2002) believes that the achievement gap in public education is much narrower than publicized. Bracey applied the statistical phenomena, Simpson’s Paradox, to NAEP test results from 1975 and 1996. Simpson’s paradox is a reversal in a relationship between variables when the data from several groups are combined into a



single group (Moore, 1995). According to Bracey, the effect of the change in the racial composition of America's classrooms from 1976 to 1996 on NAEP scores is an application of this paradox. In the case of NAEP scores, the data can be grouped into several categories such as by race, socioeconomic status, or parental education level. The conclusion initially drawn from the universe of data may be that there have been modest gains in performance among the nations' school children. Bracey reported that analysis of NAEP data within individual subgroups shows the performance gains for white, black, and Hispanic students, is greater than that for the whole population of test takers.

Analysts have been challenged to find the most effective means to graphically represent the achievement gap between groups. To help visualize changes in test scores and test-score gaps for whole groups of students over time, educational data analysts have utilized graphing methods commonly used in such fields as medical research, insurance, and engineering. "Cumulative-distribution function" charts may be created to display test scores within performance bands (Olson, 2002). This graphing methodology, as well as traditional histograms and line graphs may be useful for trend analysis of NAEP data.

## CHAPTER 4

### ANALYSIS OF DATA

#### Introduction

The educational achievement of black students in private and nonpublic schools will be examined using the National Achievement Educational Progress Mathematics test results from the past decade. Using a quantitative descriptive method of analysis of NAEP data, the size of the achievement gap between black and white students in public schools will be compared to the achievement gap between black and white students in nonpublic schools. In addition, variables that may contribute to the achievement gap between black and white students will be investigated. These variables include parental support for student achievement, literary materials in the home environment, student's self perception of math ability, time spent doing homework each day and access to higher level mathematics courses.

For the purposes of this study, educational achievement is defined as attaining minimum competency scores on the NAEP mathematics tests. This study utilizes National NAEP mathematics examination scores for grades eight and twelve for comparative analysis. For the 2000 examination, the National Assessment Governing Board determined grade eight students who earned at least an average score of 262, on a scale ranging from 0 to 500, performed at a basic level of achievement in mathematics.

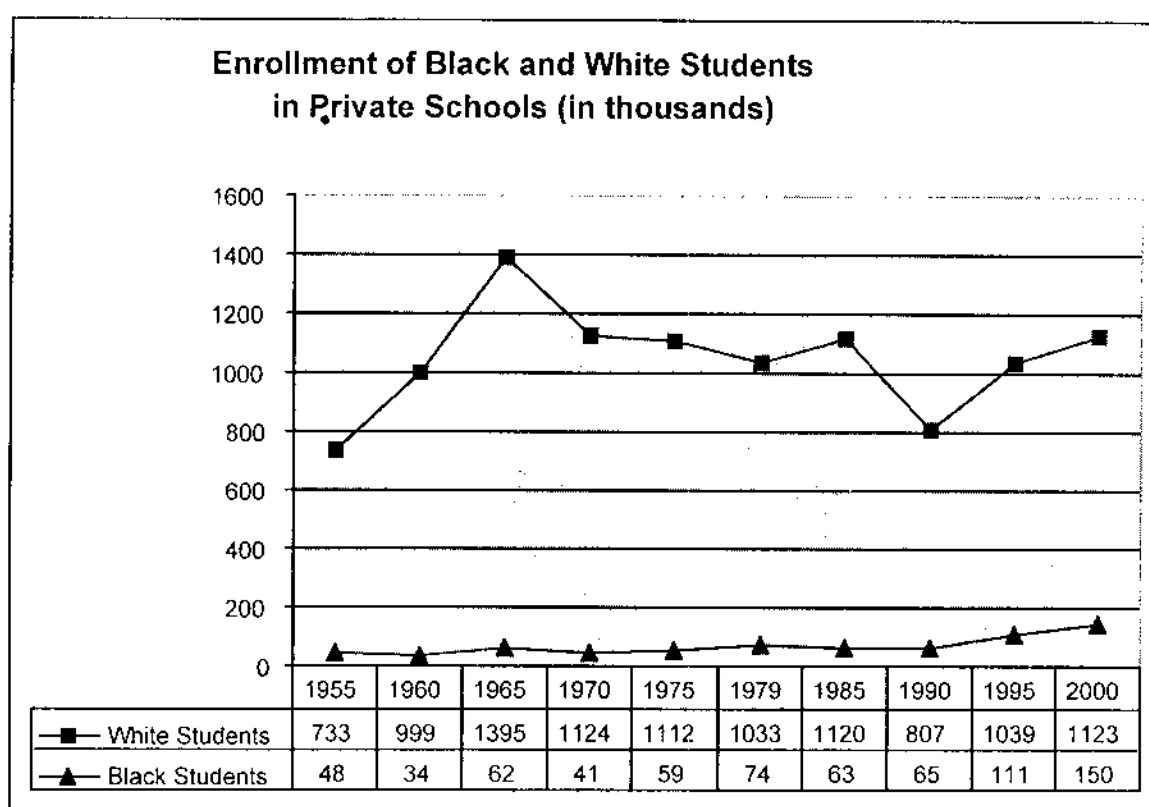
Similarly, Grade twelve students earning at least an average score of 288 performed at a basic level of achievement on the NAEP examination (U. S. Dept. of Education, 2001 a). The achievement gap will be defined as the difference in the NAEP Mathematics scores of black and white students in public, private or nonpublic schools.

#### Research Question 1

What is the enrollment pattern for black students in private schools?

The enrollment of black and white students in private schools peaked during the 1960's, however after a brief decline in the early seventies enrollment of black students in private schools has been on the rise. The enrollment of white students in private schools peaked in 1965 at 1,395,000 students (U.S. Census Bureau, 2001 c) followed by an overall decline in enrollment throughout the next three decades. According to the U.S. Census Bureau, in 2000 there were 150,000 black students in private schools - more than a three-fold increase in the 1955 enrollment level of 48,000. In 2000 there were 1,123,000 white students enrolled in private schools. The National Center for Education Statistics projects there will be a substantial increase in secondary private school enrollment by the year 2010 (CAPE, 2001).

Figures 8 and 9 plot the enrollment trends of black and white students in private schools between 1955 and 2000. Figure 8 displays enrollment figures in thousands and Figure 9 the racial composition of private schools as a percent of enrollment. As Figure 8 reflects, since the sixties the enrollment of white students in private schools has declined with a substantial drop in the early nineties. According to Kiviat (2000), the decline in white student enrollment in private schools throughout the late sixties and seventies can be explained by "white flight" from urban school districts to suburban communities.



*Figure 8.* Enrollment of Black and White Students in Private Schools. U.S. Census Bureau, Current Population Survey (2001)

Figure 8 also shows the enrollment of black students in private schools has also fluctuated; however, the changes in enrollment during the sixties and the past decade were not as dramatic as that of white children. The peaks in black student enrollment in private schools after the civil rights movement and during the late 70's may be explained by a resurgence in black parents' choice of afrocentric and religious schools for their children. Enrollment declines during the late 80's may be a result of the downturn in economic conditions in the United States. The gap in achievement between black and white students also became a public issue fueling the debate throughout the 90's over the

use of vouchers to fund private school education for poor and minority children. Since 1990 the enrollment of both black and white students in private students has been rising.

In 1955 approximately 6 percent of private school students were black. Over the course of the next 40 years the student population in private schools gradually became more diverse. As Figure 9 illustrates, by 2000 the percentage of black students enrolled in private schools had nearly doubled.

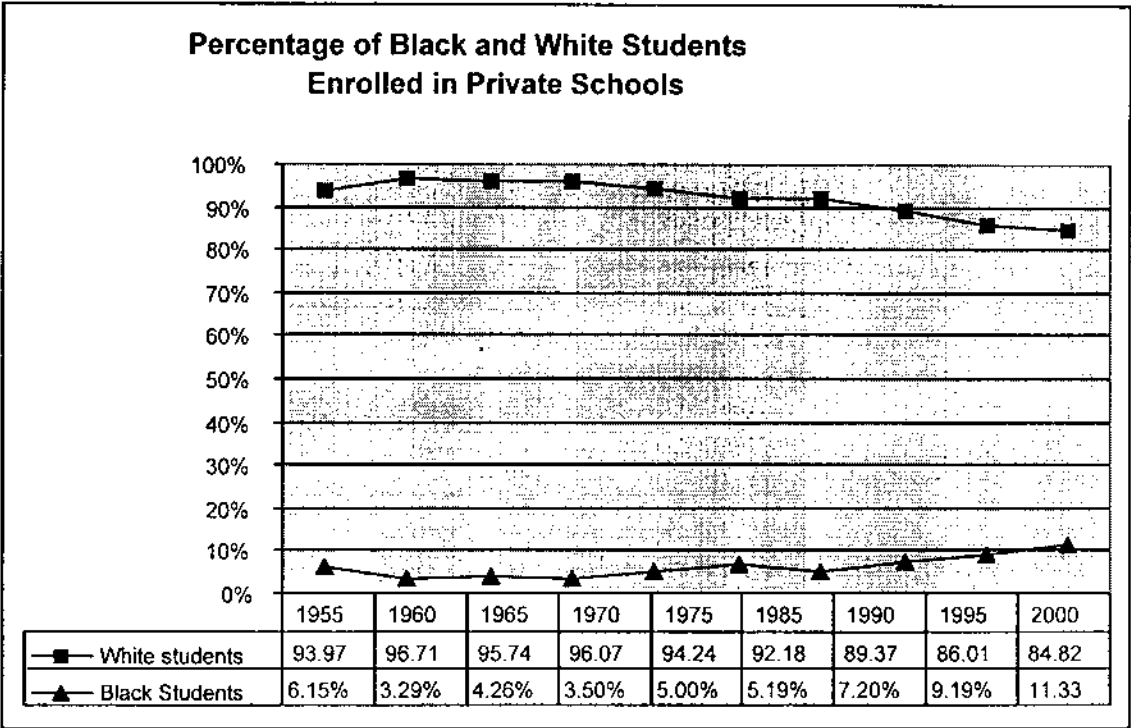
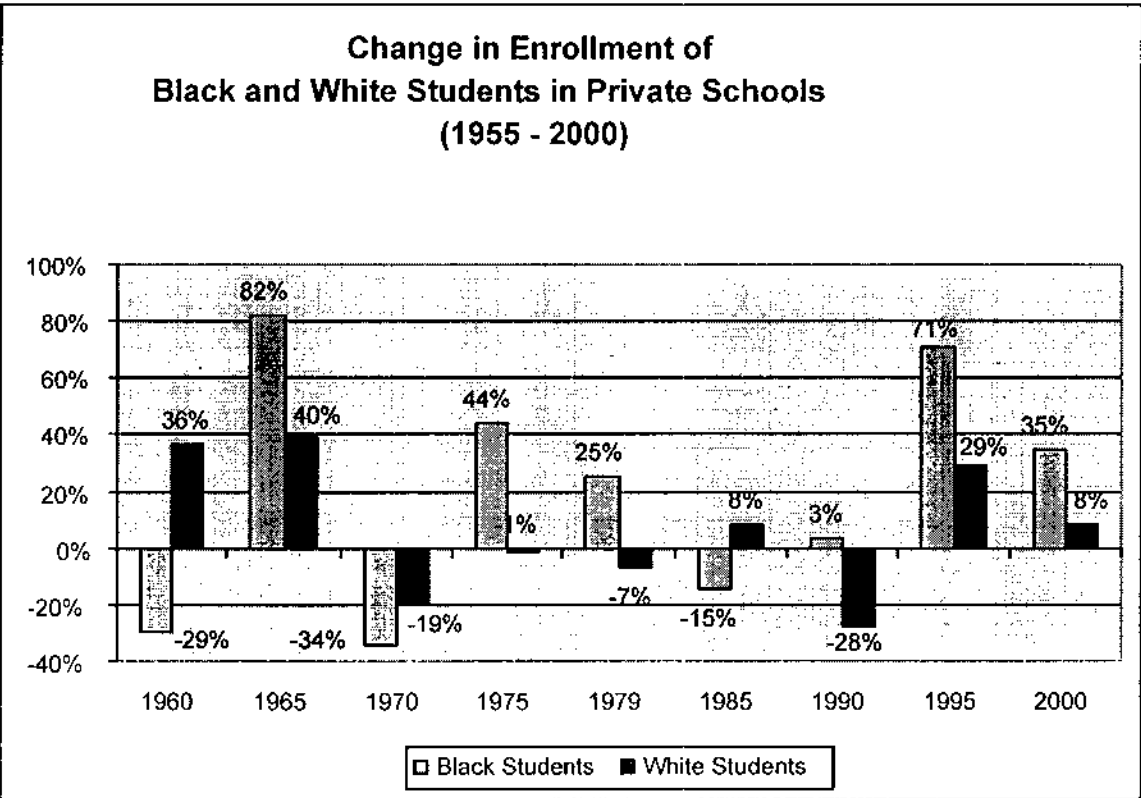


Figure 9. Percentage of Black and White Students Enrolled in Private Schools. U.S. Census Bureau, Current Population Survey (2001).

Figure 10 shows the change in the percentage of enrollment of black students and white students since 1960. Between 1965 and 1975 increases in white enrollment were paralleled by increases in black enrollment in private schools. This pattern changed

between 1975 and 1990. During that period, there appears to be an inverse relationship between the enrollment patterns of black and white students. Since 1995, the enrollment of black and white students in private schools has increased proportionally; however, the enrollment of black students in private schools has been increasing at a greater rate.



*Figure 10.* Change in Enrollment of Black and White Students in Private Schools. U.S. Census Bureau, Current Population Survey (2001).

## Research Question 2

How do black private and nonpublic school students in grades 8 and 12 perform on national achievement tests compared to white private and nonpublic school students in grades 8 and 12?

The results of the national NAEP Mathematics assessment administered in 1990, 1992, 1996 and 2000 for grades 8 and 12 are reported by the National Center for Education Statistics and made available to the public via their online data tool.

Table 5 reports the average scale score on the Grade eight and Grade twelve 2000 National NAEP Mathematics Examination for black and white public and private school students. The 1990, 1992 and 1996 data for private school students was unavailable. Table 6 reports the differences in the average scale scores for black and white students in public and nonpublic schools in Grades 8 and 12 for the past decade. The online data tool was used to summarize achievement scores by grade, race and school type as reported in the tables referenced throughout this chapter.

As the data in Table 5 reflects, at grade eight, the average scale score for black private school students was 262, the established cutpoint for the basic achievement level for the 2000 mathematics examination. The average scale score for white private school students at grade eight was 294, 32 points higher than the cutpoint and the average score for black private school students. At grade twelve the average scale scores for black private school seniors was 296 compared to 317 for white private school students. Black private high school seniors scored on average 8 points above the cutpoint for the basic achievement level on the 2000 mathematics examination, a score of 288, while their white peers scored 29 points above the cutpoint.

Table 5

*Comparison of Average Scale Score on Grade 8 and Grade 12 2000 NAEP Math Examination for Public and Private School Students*

School Type	Grade	White Students	S. E.	Black Students	S. E.	Difference
Public	8	285	0.9	246	1.5	39
	12	307	1.2	273	2.0	34
Private	8	294	1.4	262	3.1	32
	12	317	1.9	296	4.5	21

Note: U.S. Department of Education National Center for Educational Statistics (2000)

Table 6 provides data regarding the differences between black and white students in nonpublic schools in Grades 8 and 12 between 1990 and 2000. The National Center for Education Statistics did not report the Grade eight average scale score for black nonpublic school students in 1990 due to a sample size too small to permit a reliable estimate. Using the data available for 1992, 1996 and 2000, an estimated average scale score for black nonpublic school students in 1990 was computed. The mean of the three average scale scores is, 256, the value reported in Table 6 as the estimated average scale score for black nonpublic school reported in 1990.



Table 6

*Comparison of Average Scale Score on Grade 8 and Grade 12 NAEP Math Examination for White and Black Nonpublic School Students*

Year	Grade	White Students	S. E.	Black Students	S. E	Difference
1990	8	276	1.9	256*		20
	12	304	3.4	272	4.7	32
1992	8	286	1.9	250	6.0	36
	12	317	2.4	295	4.1	22
1996	8	288	2.0	259	5.9	29
	12	317	2.3	298	3.0	19
2000	8	291	1.2	259	2.2	32
	12	317	1.2	293	3.0	24

Note: U.S. Department of Education National Center for Educational Statistics (2000).

\*Estimated

As illustrated in Table 6, white nonpublic school students outperformed black nonpublic school students on each test administration at both grade levels. White nonpublic school students on average received higher scale scores on the assessments than their black peers. In 2000 the average scale scores of white nonpublic school students in grade eight was an estimated 32 points higher than black students. At grade twelve, the average scale score for white nonpublic school students was approximately 24 points higher than black students in nonpublic schools.

The difference in the scores of white and black twelfth grade nonpublic school students decreased eight points in the past decade, from a 32-point difference in 1990 to a 24-point difference in 2000. Between 1990 and 1996 the gap in achievement between white and black twelfth graders declined to only 10 points. By contrast using the estimated mean scale score for black nonpublic school eighth graders, there was a 12-point increase in the difference between white and black nonpublic school students.

Throughout the past decade black private and nonpublic school students at grades 8 and 12 scored below white private and nonpublic school students on the mathematics achievement test. Since 1992 the average scale score for white eighth graders in nonpublic schools has been increasing; however after an increase in 1996, the average scale score of black eighth graders in nonpublic schools has remained the same. Black eighth grade nonpublic school students experiences the smallest gains with a 9-point increase in average scale score compared to a 15 point increase for their white peers. The greatest gain in average scale scores in the past decade was experienced by black nonpublic schools seniors. The average scale score for this subgroup rose 21-points. Following a 13-point increase in 1992, the average scale score for white seniors in nonpublic schools has remained constant at 317.

Research Question 3

How do black private and nonpublic school students in grades 8 and 12 perform on national achievement tests compared to black students in public schools in grades 8 and 12?

Between 1990 and 2000 black nonpublic school students outperformed black public school students on the mathematics assessment as illustrated in Table 7 below. In 2000 black eighth graders who attended private schools scored on average 16-points higher than black public school students on the mathematics achievement test (Table 5). Black private school students in twelfth grade scored 23-points higher than black public school students on the 2000 mathematics exam. The difference in achievement between black twelfth-graders in public and private schools was two points narrower than the gap between black and white seniors in private schools. By contrast the difference in achievement between black students in public and white eighth graders was half the size of the difference in achievement between black and white students in private schools.

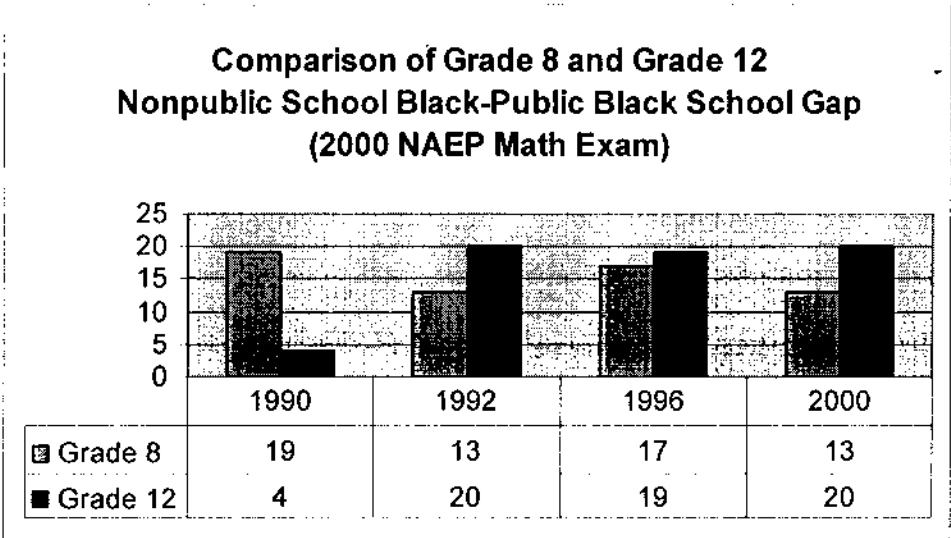
Table 7  
*Comparison of Average Scale Score on Grade 8 and Grade 12 NAEP Math Examination for Black Nonpublic School Students vs. Black Public Students*

Year	Grade	Black Nonpublic Students	Black Public Students	Difference
1990	8	256*	237	19
	12	272	268	4
1992	8	250	237	13
	12	295	275	20
1996	8	259	242	17
	12	298	279	19
2000	8	259	246	13
	12	293	273	20

Note: U.S. Department of Education National Center for Educational Statistics (2000). \* Estimated

The average difference in the mean scale score of black public school students and black nonpublic school students in grade eight during the past decade was an estimated 16 points. Since 1992 the average scale score of both black nonpublic school and black public school eighth graders has increased 9 points. Yet in 2000, the difference in achievement scores for these two groups dropped to 1992 levels. In 2000 both groups scored on average below the basic achievement level cutpoint of 262.

As Figure 11 illustrated, since 1992 the difference in achievement between black students in public and nonpublic schools is wider in grade twelve compared to grade eight. The data reflects a progressive improvement in the mathematics achievement of black students in private and nonpublic schools. Using the estimated average scale score for black nonpublic school students, at grade eight, the difference in the mean scale score of black public and nonpublic school students declined from 19 to 13 points. In contrast the difference in the average mean scale score of black public and nonpublic school seniors increased from four points in 1990 to 20 points in 2000.



*Figure 11.* Comparison of Grade 8 and Grade 12 Black Nonpublic School-Public School Students Gap. U.S. Department of Education (2000). Note: 1990 data for Grade eight is estimated.

Black nonpublic school test takers in grade twelve scored 4 to 20-points higher than black public school students on the four National NAEP math examinations. In 1990, the gap between black nonpublic school and public school twelfth grade students was only 4 points, however, by 2000, the gap had widened to 20 points. The size of the gap between black twelfth graders was 14 points smaller than the gap between white and black students in nonpublic schools.

Research Question 4

How does the black-white educational achievement gap in private and nonpublic schools compare to the black-white gap in public schools?

As reflected in Table 8 below, the achievement gap between white and black eighth graders in public schools, measured by the difference in average scale score on the NAEP mathematics exam, has increased from 33 points in 1990 to 39 points in 2000. The achievement gap between white and black students in nonpublic schools in grade eight also increased from an estimated 20 points to 36 points in 1992 to 32 points in 2000 (Table 6). In 2000 there was a 21-point difference in the mean scale score of white and black private school students (Table 5).

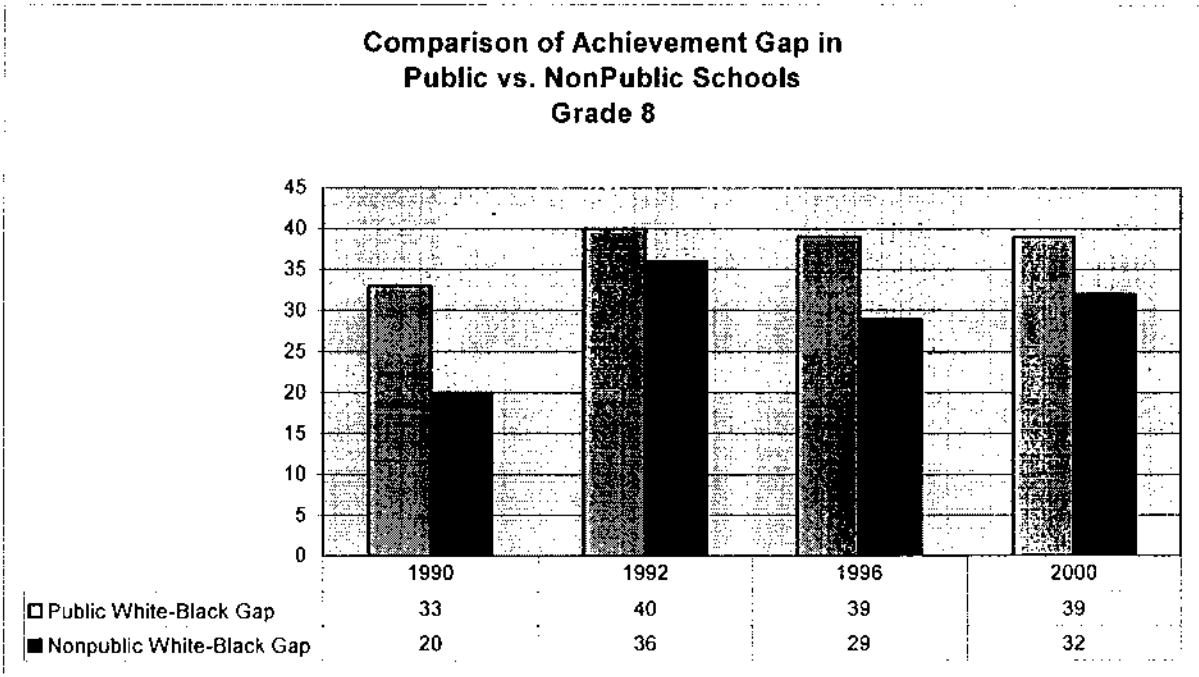
Table 8  
*Comparison of Average Scale Score on Grade 8 and Grade 12 2000 NAEP Math Examination for White and Black Public School Students*

Year	Grade	White Students	S. E.	Black Students	S. E.	Difference
1990	8	270	1.5	237	2.8	33
	12	300	1.3	268	2.0	32
1992	8	277	1.1	237	1.4	40
	12	304	1.0	275	1.7	29
1996	8	281	1.4	242	2.1	39
	12	310	1.0	279	2.3	31
2000	8	285	0.9	246	1.5	39
	12	307	1.2	273	2.0	34

Note: U.S. Department of Education National Center for Educational Statistics (2000)

The largest gap for both public and nonpublic schools was recorded in 1992 with a 40-point difference for public school students and a 36-point difference for nonpublic school students. The smallest gap in achievement for both school types was recorded in

1990. As Figure 12 reflects, the gap between white and black eighth grade test takers in public schools was larger than the gap between white and black nonpublic school students for each of the four testing years. After a seven-point decrease in the size of the gap in 1996 the gap between black and white nonpublic school students increased by three points in 2000. By contrast, there was no change in the size of the gap in public schools from 1996 to 2000. In 2000 the achievement gap in public schools was seven points larger than the gap in private schools and nonpublic schools for students in grade eight.



*Figure 12.* Comparison of Achievement Gap in Public vs. Nonpublic Schools Grade 8.

U.S. Department of Education, National Center for Educational Statistics (2000)

Note: 1990 data for grade 8 is estimated

As illustrated in Figure 13, in 1990 the gap between white and black twelfth grade students in public and nonpublic schools was the same. 1990 also marks the year that the gap in white-black scores for nonpublic schools was the largest. The achievement gap between white and black students in nonpublic schools has decreased from 32 points in 1990 to 24 points in 2000. During the same period, the achievement gap between white and black students in public schools, increased from 32 points in 1990 to 34 points in 2000 (Table 7). However, the year 2000 marked the largest gap in white-black average scale scores for public high school seniors.

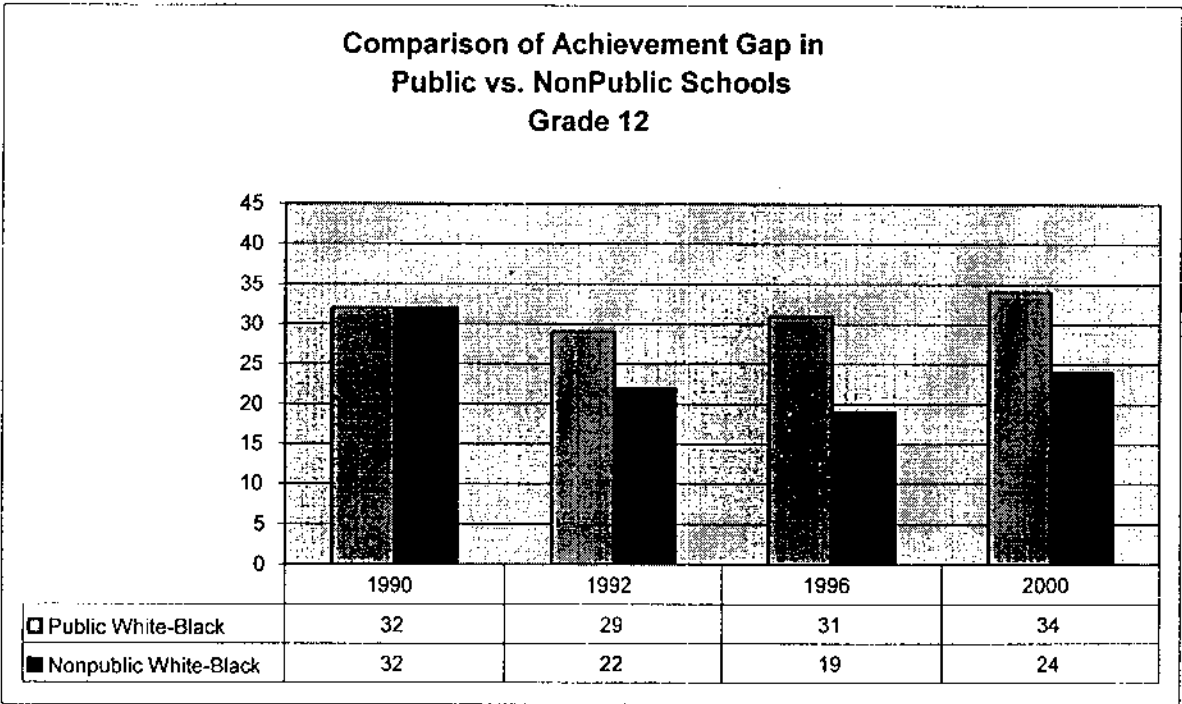


Figure 13. Comparison of Achievement Gap in Public vs. Nonpublic Schools Grade 12.

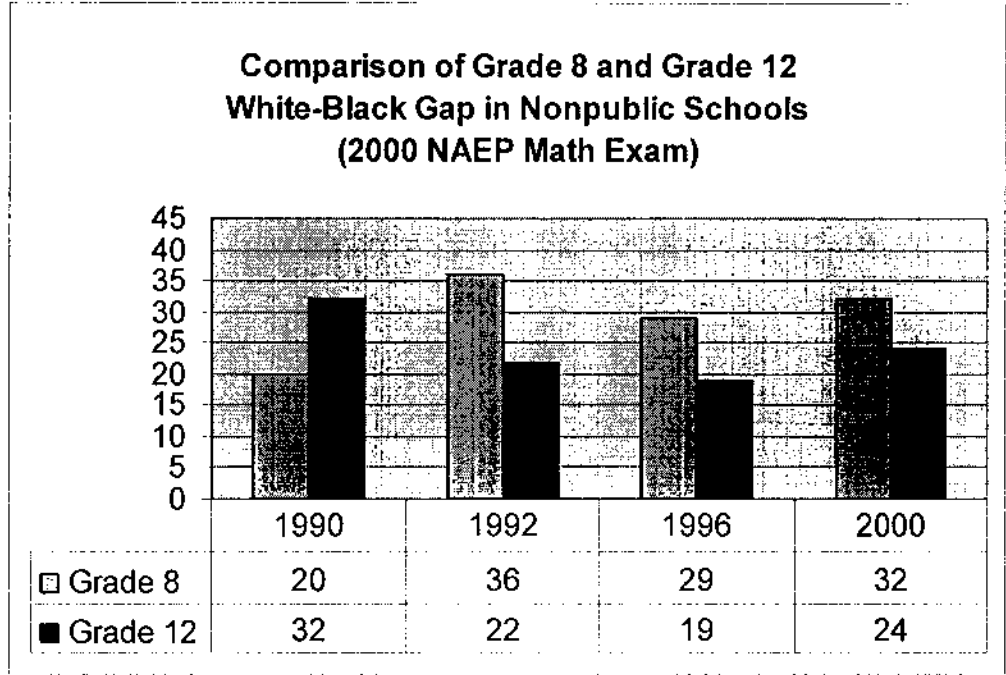
U.S. Department of Education National Center for Educational Statistics (2000)

The gap in the achievement of black and white public seniors has widened as the gap in between black and white seniors in nonpublic schools has narrowed. As Figure 13



reflects, the gap between white and black twelfth grade test takers in public schools has been greater than the gap between white and black nonpublic school students since 1992. After two consecutive testing periods where the white-black test score gap declined, there was a five-point increase in the gap between 1996 and 2000 for nonpublic schools.

Figure 14 shows the comparison between the differences in average achievement scores for white and black nonpublic school students narrows from grade eight to grade twelve. With the exception of 1990, for which the mean scale score for black nonpublic school students is estimated, the gap between nonpublic school students is wider in grade eight compared to grade twelve.



*Figure 14.* Comparison of Grade 8 and Grade 12 White-Black Gap in Nonpublic Schools.  
U.S. Department of Education (2000). Note: 1990 data for Grade eight is estimated.

### Research Questions 5 and 6

What are the differences in the affect of the selected noncognitive student behavior, school and home environment variables on the educational achievement of black nonpublic school students compared to white nonpublic school students?

What are the differences in the affect of the selected noncognitive student behavior, school and home environment variables on the educational achievement of black public school students compared to black nonpublic school students?

The following is a summary of statistical analysis performed on the NAEP Mathematics Grades 8 and 12 data base using the AM Software. Appropriate weights were applied to the sample data in order to draw justifiable conclusions about the student population. An estimated 3,489,374 cases were processed in the weighted eighth grade public school sample and 350,233 cases were processed in the weighted nonpublic school sample. For grade 12, 279,746 cases were processed in the weighted nonpublic school sample and 2,977,272 cases were processed in the weighted public school sample.

Two-sample t-tests as described earlier and tests for homogeneity, using the Chi-square test statistic, will be conducted as part of the analysis for these research questions. The Chi-square test statistic is used to conduct a test of homogeneity to determine if proportions of select characteristics differ within the groups under study (Triola, 1999). The significance level is set at  $\alpha = .05$  for both the t-test and Chi-square analysis. Since the sample sizes are sufficiently large, the critical values may be found in a standard Chi-Square Distribution table using the appropriate degrees of freedom (Hawley, 1999). The formula for the computation of Chi-square,  $\chi^2$ , statistic is:

$$\chi^2 = \sum \frac{(\text{Observed frequency} - \text{Expected frequency})^2}{\text{Expected frequency}}$$
 where the expected frequency is defined as

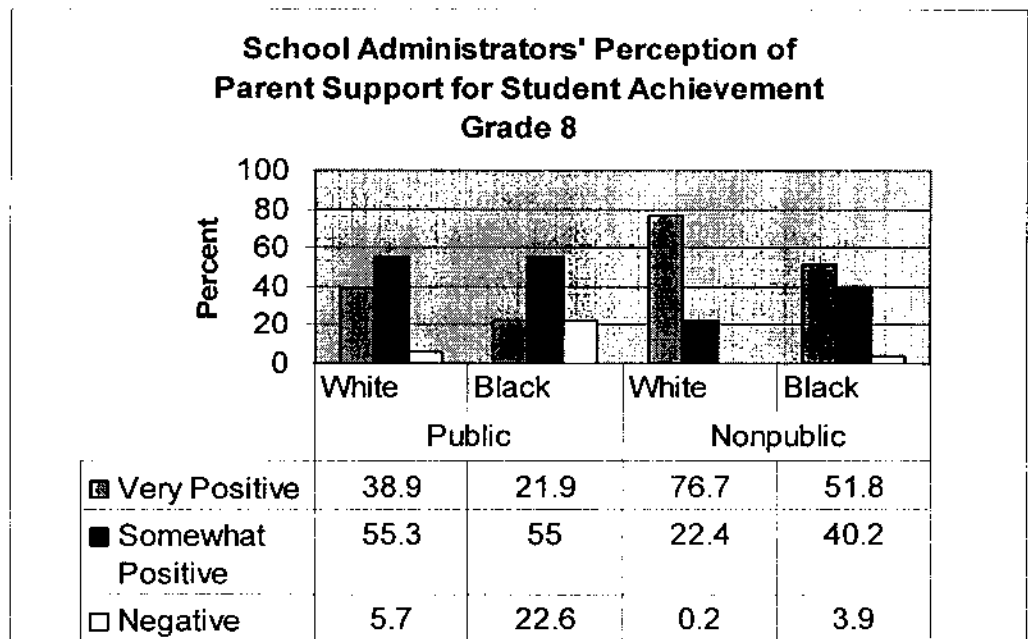
$$\text{Expected Frequency} = \frac{(\text{Row total} \times \text{Column total})}{\text{Table Total}}$$
 and the degrees of freedom are computed by

$$\text{Degrees of freedom} = (\text{number of rows} - 1) \times (\text{number of columns} - 1)$$

The formulas are provided for reference; however the TI-83 calculator was used to facilitate the calculations.

*Parent Support for Student Achievement*

Public and nonpublic school administrators who participated in the 2000 NAEP testing program were asked to rate the level of support for student achievement they observed within their parent community. The responses of the school administrators' are reported in Figure 15 below:



*Figure 15. School Administrators Perception of Parent Support for Student Achievement Grade 8.*

These responses are based on a weighted count of 2,145,207 white and 454,980 black students from the public school sample and 261,519 white and 27,098 black students from the nonpublic school sample. The percentages may not add to 100 percent due to omitted responses from students.

School Administrators in nonpublic schools reported greater parental support for student achievement than did their peers from public schools. Public school administrators reported that 94.2 percent of white parents compared to 77 percent of black parents had a positive level of support for the academic achievement of their

children. The nonpublic school administrators in the sample, however, reported that 99 percent of white parents and 92 percent of black parents have a positive level of support for the academic achievement of their children. More than twenty-two percent of the black parents in public schools compared to 3.9 percent of black parents in nonpublic schools are seen by school administrators as negative influences on their child's achievement in school.

At grade eight, 77% of nonpublic school administrators perceived white students received very positive parental support compared to 52% of their black students. Regarding the nonpublic school data in Figure 15 as a 3 X 2 table, a test for homogeneity was conducted to determine if there was a difference in the student administrators' perception of parental support by student race. At  $\alpha = .05$ , there was a statistically significant difference in the proportions ( $\chi^2 = 12.1$ ,  $p = .002$ , d.f. = 2) between race and level of positive parent support for achievement as perceived by nonpublic school administrators.

Public school administrators perceived 55% of their black eighth grade students received somewhat positive support for achievement compared to 40% of black students in nonpublic schools. Segregating the data in Figure 15 for black public and nonpublic school students into a 3 X 2 table, a test for homogeneity was conducted to determine if there was a difference in the perception of black parents' support for student achievement by school type. At  $\alpha = .05$ , there was a statistically significant difference in the proportions ( $\chi^2 = 27.83$ ,  $p = .000$ , d.f. = 2) by school type at grade eight.

As with the grade eight sample, the nonpublic school administrators in the grade 12 sample had a more positive perception of their parent community's support for student

achievement (Figure 16). Most public school administrators believed their students received somewhat positive parental support.

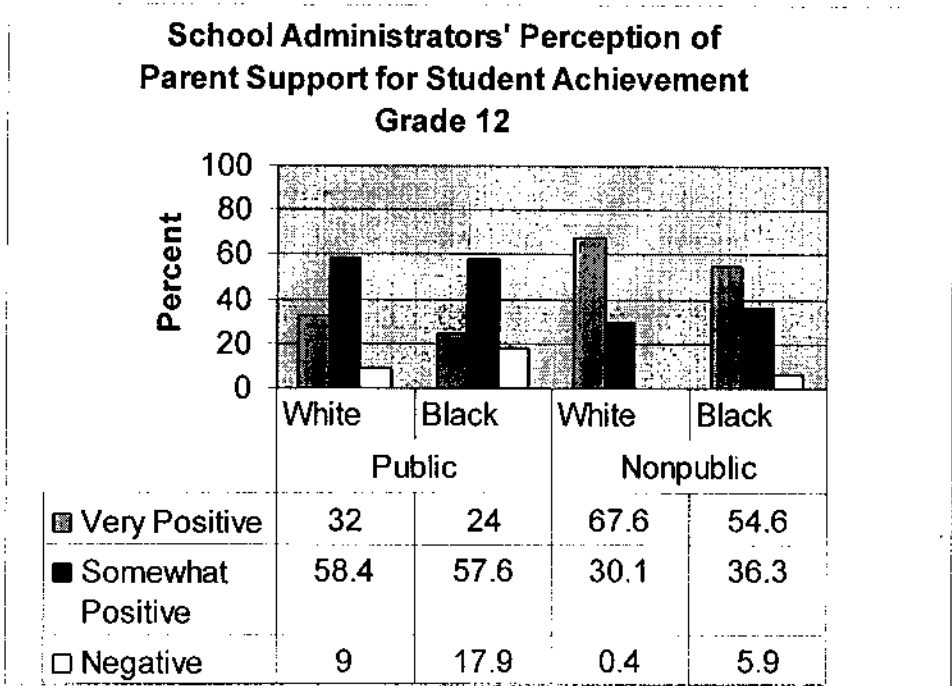


Figure 16. School Administrators Perception of Parent Support for Student Achievement Grade 12.

These responses are based on a weighted count of 1,979,726 white and 387,940 black students from the public school sample and 215,658 white and 17,680 black students from the nonpublic school sample. The percentages may not add to 100 percent due to omitted responses from students.

At grade 12, 68% of nonpublic school administrators perceived white students received very positive parental support compared to 56% of their black students. Regarding the nonpublic school data in Figure 16 as a 3 X 2 table, a test for homogeneity was conducted to determine if there was a difference in the student administrators' perception of parental

support by student race. At  $\alpha = .05$ , there was no statistically significant difference in the proportions ( $\chi^2 = 5.27$ ,  $p = .07$ ,  $d.f. = 2$ ) between race and level of positive parent support for achievement as perceived by nonpublic school administrators at grade 12.

Public school administrators perceived 58% of their black high school seniors received somewhat positive support for achievement compared to 36% of black twelfth graders in nonpublic schools. Segregating the data in Figure 15 for black public and nonpublic school students into a 3 X 2 table, a test for homogeneity was conducted to determine if there was a difference in the perception of black parents' support for student achievement by school type. At  $\alpha = .05$ , there was also a statistically significant difference in the proportions ( $\chi^2 = 22.8$ ,  $p = .000$ ,  $d.f. = 2$ ) by school type at grade 12.

The mean math achievement score for students for whom school administrators reported very positive or somewhat positive parent support for student achievement are reported in Table 9 below. The mean mathematic achievement score for white nonpublic school eighth graders with positive parental support was 291 compared to 259 for black nonpublic school students. The mean mathematic achievement score for black public school eighth graders with positive parental support was 9.6 points below black nonpublic school students. The average scale scores for black students in public and nonpublic schools were below the cutpoint for the basic level of achievement on the mathematics exam (262).

At grade 8, the majority of nonpublic school students, regardless of race, reported there were four or more literary articles in the home. The majority of white public school students also reported the same level of literary articles. Only one-third of the black students in public schools reported there were four or more literary articles in the home. The responses reported in Figure 17 are based on a weighted count of 2,145,207 whites and 454,980 black students from the public school sample compared to 273,269 white and 29,248 black students from the nonpublic school sample.

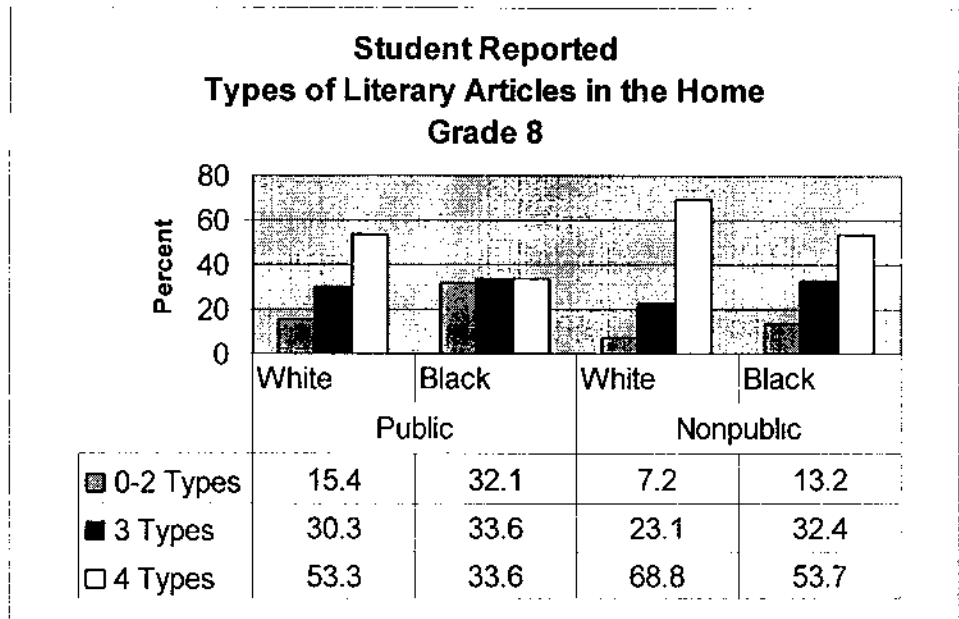


Figure 17. Student Reported Types of Literary Articles in the Home Grade 8.

Viewing the nonpublic school data in Figure 17 as a 3 X 2 table, a test for homogeneity was conducted to determine if there was a difference in the proportion of literary articles in the home by student race. At  $\alpha = .05$ , there was no statistically significant difference in the proportions ( $\chi^2 = 5.10$ ,  $p = .079$ , d.f. = 2) reported by race in the nonpublic school sample at grade 8. There is enough statistical evidence to conclude



the quantities of literary articles are present in much the same proportion in white homes as black homes for the nonpublic school sample.

At grade 8, 34% of black public school students compared to 54% of black nonpublic school students reported there were four or more types of literary articles in their homes. Segregating the data in Figure 17 for black public and nonpublic school students into a 3 X 2 table, a test for homogeneity was conducted to determine if there was a difference in the amount of literary articles black homes by school type. At  $\alpha = .05$ , there was also a statistically significant difference in the proportions ( $\chi^2 = 12.62$ ,  $p = .002$ , d.f. = 2) by school type. There is enough statistical evidence to conclude there is a difference in the quantities of literary articles in the homes of black public school students and black nonpublic school students at grade 8.

At grade 12, the majority of white public and white nonpublic school students reported there were four or more types of literary material at home (Figure 18). However, 43 percent of black nonpublic school students and 39 percent of black public school students reported there were four or more types of literary material in their home.

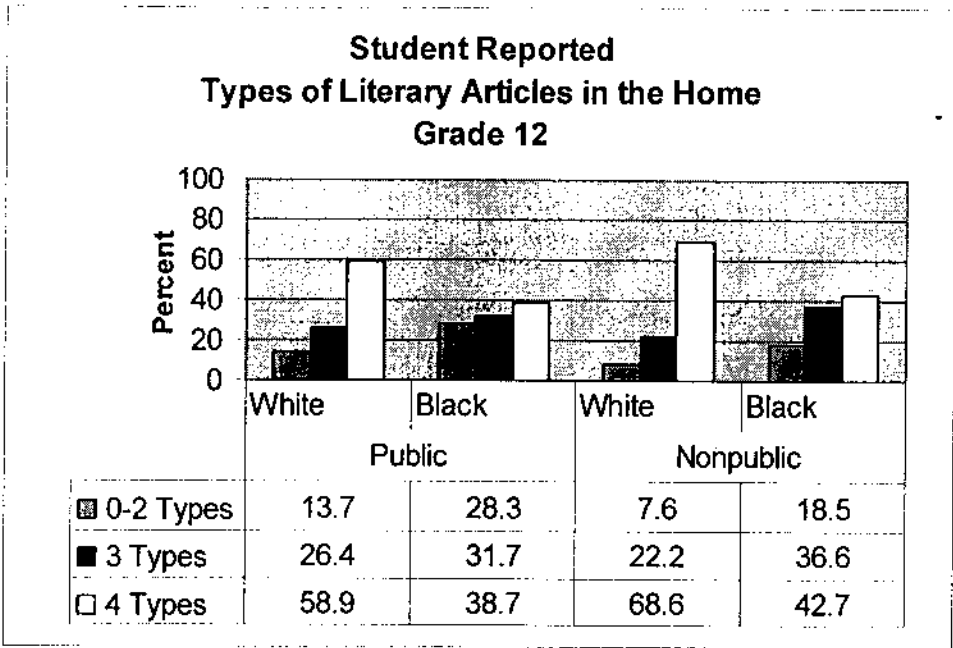


Figure 18. Student Reported Types of Literary Articles in the Home Grade 12.

The nonpublic school data in Figure 18 can be segregated into a 3 X 2 table in order to conduct a test for homogeneity to determine if there was a difference in the proportion of literary articles in the home by student race. At  $\alpha = .05$ , there was a statistically significant difference in the proportions ( $\chi^2 = 14.5$ ,  $p = .000$ , d.f. = 2) reported by race in the nonpublic school sample at grade 12. Unlike with the grade 8 sample for nonpublic schools, there is enough statistical evidence to conclude the literary articles are present in different proportions in the homes of white and black nonpublic school high school seniors.

At grade 12, 39% of black public school students compared to 43% of black nonpublic school students reported there were four or more types of literary articles in their homes. Segregating the data in Figure 18 for black public and nonpublic school students into a 3 X 2 table, a test for homogeneity was conducted to determine if there was a difference in the amount of literary articles black homes by school type. At  $\alpha =$

.05, there was no statistically significant difference in the proportions ( $\chi^2 = 2.64$ ,  $p = .268$ , d.f. = 2) by school type. There is enough statistical evidence to conclude the quantities of literary articles are present in much the same proportion in black high school seniors' homes regardless of school type.

At grade 8, at 294.077 and 262.314 respectively, the mean mathematics achievement scores for white and black nonpublic school students with four or more types of literary materials in the home were above the cutpoint for the basic level of achievement (Table 10). The mean mathematics achievement score for black public school students in this subgroup was 252.042, ten points below the basic cutpoint, 262.

Table 10

*Comparison of Mean NAEP math score of White and Black Students Relative to Home Environment Variable – Grade 8*

	PUBLIC				NONPUBLIC			
	White		Black		White		Black	
	Mean	S.E.	Mean	S.E.	Mean	S.E.	Mean	S.E.
0-2 types	270.983	1.834	240.156	2.005	275.719	3.398	253.552	3.402
3 types	281.960	1.174	246.175	1.881	287.988	1.264	255.866	2.867
4 types	291.212	1.004	252.042	1.864	294.077	1.043	262.314	2.257

A two-sample t-test for independent samples was conducted to determine if there was a statistically significant difference in the achievement of black public and nonpublic school eighth graders who reported there were four or more literary articles in their home. At  $\alpha = .05$  there was a statistically significant difference ( $t = -3.486$ ,  $p = 0.000$ ) in the mean math scores of black public and nonpublic school students in grade eight. Black public school students in this subgroup earned an average scale score 10 points below black nonpublic school students.

Using the same t-test procedures, at  $\alpha = .05$  there was also a statistically significant difference ( $t= 12.767, p= .000$ ) in the mean math scores of white nonpublic and black nonpublic eighth graders who reported the presence four or more articles in their home. White nonpublic school students scored an average of 32 points above their black classmates. Despite nearly equivalent percentage of students with literacy level of 4, the mean math score for white public school students was approximately 30 points higher than the mean math score of black nonpublic school students. The data indicates race has a greater influence on mathematics achievement than the number of literary articles in a student's home.

At grade 12, the mean mathematics achievement scores for black public school students who reported there were four types of literary materials in their home was 269.98, 18 points below the cutpoint for the basic level of achievement on the mathematics assessment. The mean scores for black and white nonpublic high school seniors in this subgroup were higher, 293.876 and 319.634 respectively.

Table 11  
*Comparison of Mean NAEP Math Score of White and Black Students Relative to Home Environment Variable – Grade 12*

	PUBLIC				NONPUBLIC			
	White		Black		White		Black	
	Mean	S.E.	Mean	S.E.	Mean	S.E.	Mean	S.E.
0-2 types	296.83	1.531	269.98	1.455	309.058	1.614	291.618	3.931
3 types	303.215	1.048	273.65	1.502	313.921	1.1008	289.441	2.481
4 types	310.628	0.687	275.526	1.401	319.634	0.599	293.876	2.188

A two-sample t-test was conducted to determine that at  $\alpha = .05$  there was a statistically significant difference ( $t = -7.297, p = 0.000$ ) in the mean math scores of black

public and nonpublic school students in grade twelve who reported four or more types of literary materials in the home. Black public school students in this subgroup earned an average scale score 18 points below black nonpublic school students. Similarly, at  $\alpha = .05$  there is a statistically significant difference ( $t = 11.940, p = 0.000$ ) in the mean math scores of white nonpublic and black nonpublic students.

*Student Perception of Math Ability*

Students were asked to communicate their self-assessment of their mathematical ability by responding to the statement “I am good at math”. Students were asked to report whether they strongly agreed, agreed, were undecided, disagreed or strongly disagreed with the statement. To streamline the analysis, responses of “strongly agreed” and “agreed” are categorized together in Figure 19 as were “strongly disagreed” and “disagreed”. The total percentages may not add to 100 percent due to omitted responses from subjects.

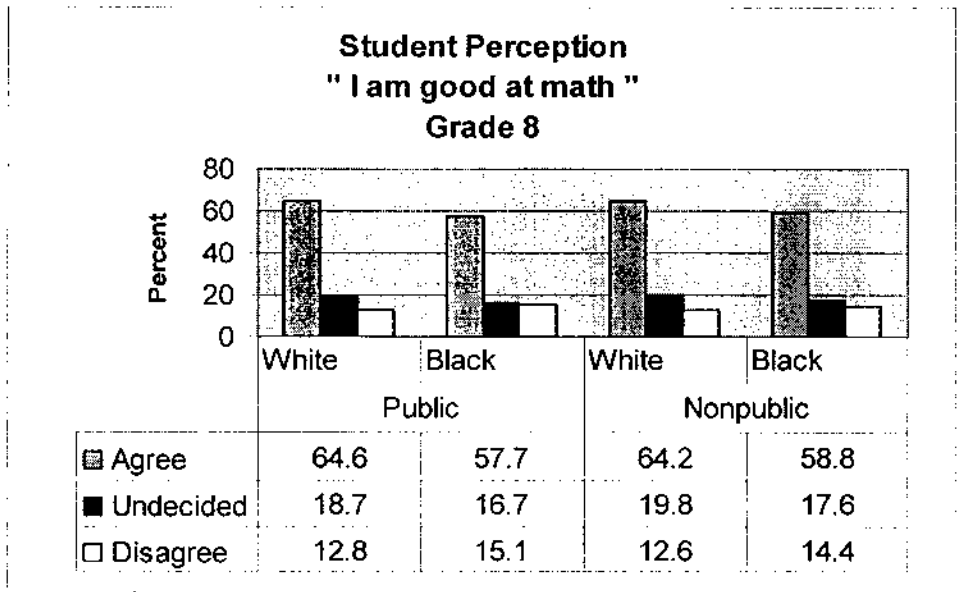


Figure 19. Student Perception of Math Ability Grade 8.

The responses above were obtained from the public school sample with a weighted count of 2,127,103 white and 441,785 black students compared to 273,268 white and 29,248 black students from the nonpublic school sample.

Sixty-four percent of white public and nonpublic school students in grade eight believed they were good in math compared to fifty-eight percent of black public school students and 59 percent of black nonpublic school students. Black students regardless of school type had a lower perception of math ability than white students. Applying a test for homogeneity to the nonpublic school data in Figure 19, there was enough statistical evidence ( $\chi^2 = .319$ ,  $p = .85$ , d.f. = 2) to conclude there was no difference in the proportion of students who believed they were good in math by race. Similarly, at  $\alpha = .05$  there was no statistical difference ( $\chi^2 = .015$ ,  $p = .915$ , d.f. = 2) in the proportion of black nonpublic school and black public school students who had a positive perception of their mathematical ability at grade 8.

Approximately 53 percent of white public school students and black nonpublic school students in grade twelve believe that they are competent in mathematics (Figure 20). Less than half of black public school students in the sample believed that they were good in math. Sixty percent of white nonpublic school students believe that they are good in math.

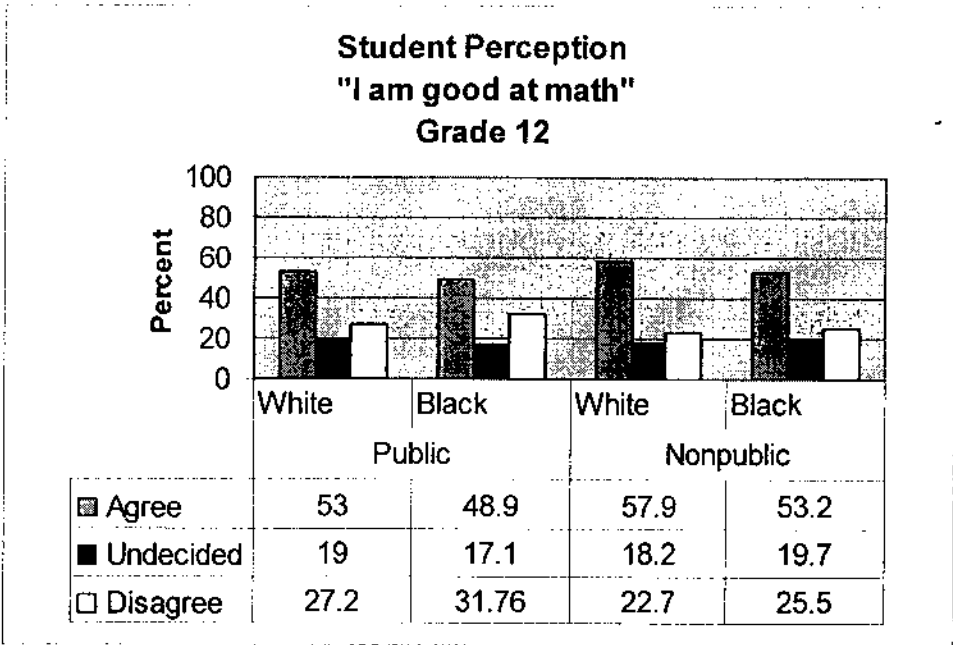


Figure 20. Student Perception of Math Ability Grade 12.

Applying a test for homogeneity to the nonpublic school data in Figure 20, the conclusions drawn are similar to those for the eight grade sample. At  $\alpha = .05$ , there was enough statistical evidence ( $\chi^2 = .55$ ,  $p = .77$ , d.f. = 2) to conclude there was no difference in the proportion of nonpublic high school seniors who believed they were good in math by race. Again at  $\alpha = .05$  there was no statistical difference ( $\chi^2 = 1.015$ ,  $p = .602$ , d.f. = 2) in the proportion of black nonpublic school and black public school students who had a positive perception of their mathematical ability at grade 12.

Table 12 summarizes the NAEP math scores for students in grades eight and twelve who agreed or strongly agreed with the statement "I am good at math." As reported in Table 12, the mean mathematics achievement scores for black public school students who reported they had a positive perception of their mathematical ability was below the cutpoint for the basic level of achievement for both grade levels. However, for nonpublic school students the mean scores for black and white eight grade students in this

subgroup were above the basic cutpoint at 273.119 and 307.294, respectively. For nonpublic high school seniors, the average scale scores for black and white students were also above the cutpoint for the basic level of achievement at 300.576 and 328.287 respectively.

Table 12

*Comparison of Mean NAEP Math Score of White and Black Students Relative to positive perception of math ability – Grades 8 and 12*

	PUBLIC				NONPUBLIC			
	White		Black		White		Black	
	Mean	S.E.	Mean	S.E.	Mean	S.E.	Mean	S.E.
Grade 8	301.317	1.535	259.682	2.168	307.294	1.423	273.119	3.045
Grade 12	318.409	0.685	283.089	1.235	328.287	0.586	300.576	2.192

Applying a two-sample t-test to the mean scores for black and white nonpublic school eighth grade students found in Table 12, at  $\alpha = .05$  there is a statistically significant difference ( $t = -3.565$ ,  $p = .000$ ) between the mean math scores of black public and nonpublic students who agreed that they were good in math. Black public school students on average scored 13 points lower than black nonpublic school students who believed they were good in math. At  $\alpha = .05$  there is also a statistically significant difference ( $t = 10.609$ ,  $p = .000$ ) between the mean math scores for white and black nonpublic school students who agreed that they were good in math. Black nonpublic school students on average scored 34 points lower than white nonpublic school students who believed they were good in math.

Using two-sample t-test procedures test for a difference between the mean scores of the grade 12 students who believe they are good in math, at  $\alpha = .05$  there is a statistically significant difference ( $t = -6.832$ ,  $p = 0.000$ ) between their scores. Black



public school students in this subgroup scored on average 7 points lower than black nonpublic school students on the mathematics examination. At  $\alpha = .05$  there is also a statistically significant difference ( $t = 12.235$ ,  $p = .000$ ) between the mean math score of twelfth grade black and white nonpublic school students who believe they are good in math. Black nonpublic school students in this subgroup scored on average 28 points lower than white nonpublic school students on the mathematics examination. Despite equal proportions of students who believed that they were good in math, the mean math score of white public school students was 18 points higher than the mean math score of black nonpublic school students.

#### *Time Spent Doing Homework*

The students in the eighth grade sample were asked to report the length of time spent each day on homework. This question was not posed to the Grade twelve respondents. The solicited responses were: (a) Don't usually have homework, (b) Have but don't do it, (c) Have a half hour or less, (d) Have one hour, or (e) More than one hour of homework each day. Responses for the latter three options are summarized in Figure 21 below:

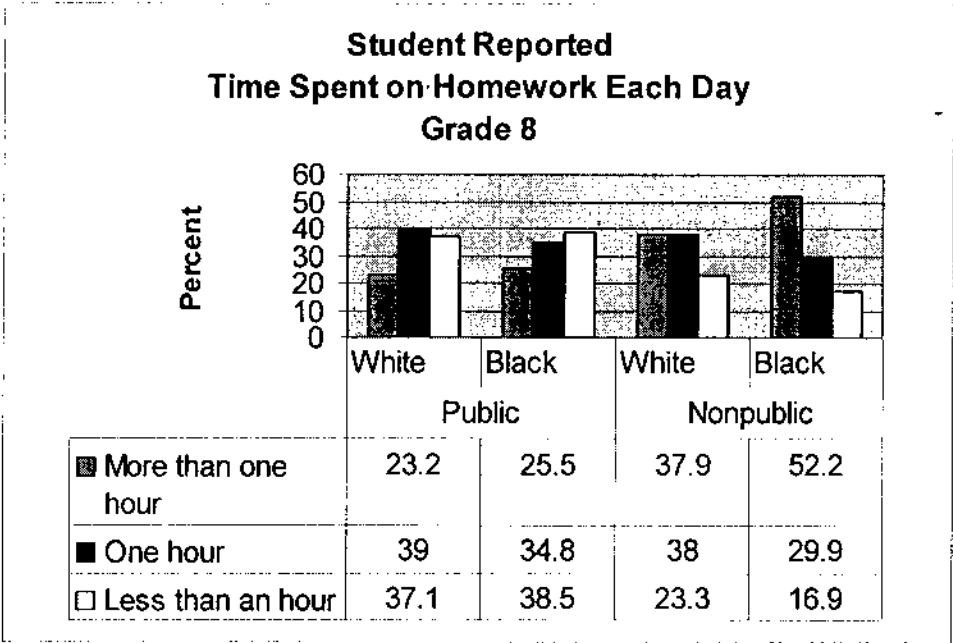


Figure 21. Student Reported Time Spent Doing Homework.

The responses above are based on a weighted count of 2,127,103 whites and 441,784 blacks from the public school sample and 273,270 whites and 29,249 blacks from the non-public school sample. The percentages may not add to 100% due to omitted or multiple responses from students.

The majority of black students in nonpublic schools reported they spent more than one hour on homework each day. According to the reported data, black students in nonpublic schools spend more time on homework on average than any of the other categories of respondents. Applying a test for homogeneity to the nonpublic school data in Figure 21, there was enough statistical evidence ( $\chi^2 = 4.019$ ,  $p = .134$ , d.f. = 2) to conclude there was no difference in the proportion of time spent on homework by race. However, at  $\alpha = .05$ , the test revealed there is a statistical difference ( $\chi^2 = 17.69$ ,  $p = .0001$ , d.f. = 2) in the time black nonpublic school and black public school students spend on their homework. Twenty-six percent of black public school students reported they

spent more than an hour on homework compared to 53 percent of black nonpublic school students.

Table 13 reports the mean scale scores of eight graders in the sample who reported that they spent more than one hour on homework each night. Black nonpublic school students in this subgroup scored on average 32 points lower than white students on the mathematics examination. The average difference between the scores of black and white public school students in this category was approximately 37 points. Two-sample t-test procedures determined there is a statistically significant difference ( $t = 14.002$ ,  $p = 0.000$ ) at  $\alpha = .05$  between the mean math scores of black and white nonpublic school students who spend an hour or more on homework each night.

Table 13  
*Comparison of Mean NAEP Math Score of White and Black Students Relative to who reported doing one hour or more of homework each night -- Grade 8*

	Public				Nonpublic			
	White		Black		White		Black	
	Mean	S.E.	Mean	S.E.	Mean	S.E.	Mean	S.E.
Grade 8	288.186	1.005	250.977	1.633	299.220	1.064	260.713	2.163

At  $\alpha = .05$  there is also a statistically significant difference ( $t = 3.527$ ,  $p = 0.000$ ) between the mean math score of black public and nonpublic school students who spend an hour or more on homework each night. Black nonpublic school students in this subgroup scored on average 10 points higher than black public school students on the mathematics examination.

Access to AP Mathematics courses

Students in the grade twelve sample were asked to respond affirmatively or negatively to questions regarding the Advanced Placement courses completed during high school. White nonpublic school students participated in AP mathematics courses at a higher rate than black nonpublic school students and public school students regardless of race. As illustrated in Figure 22, overall a greater percentage of white students took AP mathematics courses. The percentage of white nonpublic school AP students was nearly twice that of black nonpublic school students. A higher percentage of black nonpublic school students took AP Calculus courses compared to black public school students.

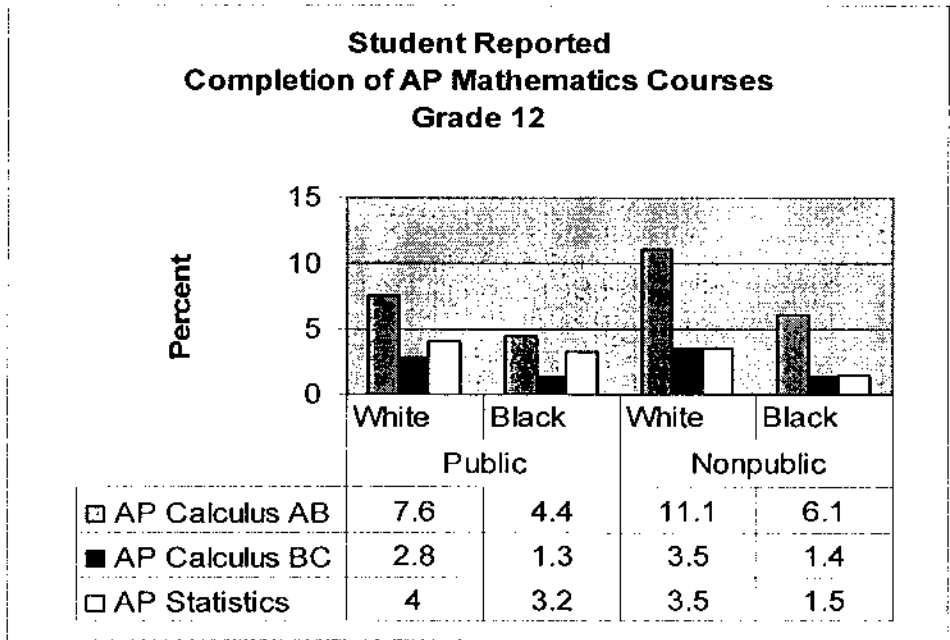


Figure 22. Student Reported AP Mathematics Courses.

A test for homogeneity was applied to the nonpublic school data in Figure 22, to determine if there was difference in the proportion of students who take AP mathematics courses. At  $\alpha = .05$ , there was enough statistical evidence ( $\chi^2 = .012$ ,  $p = .994$ , d.f. = 2) to conclude there was no statistically difference in the AP mathematics course participation

rates of black and white nonpublic high school seniors. At  $\alpha = .05$ , the test revealed there is no statistical difference ( $\chi^2 = .711$ ,  $p = .701$ , d.f. = 2) in the participation rates of black nonpublic school and black public school students in AP mathematics courses.

Using the data recorded in Table 14 two-sample t-tests were conducted to determine if there was a statistically significant difference in the mean mathematics scores of students enrolled in AP mathematics courses by race or by school type. At  $\alpha = .05$  there was a statistically significant difference ( $t = 5.124$ ,  $p = .000$ ) in the mean mathematics score for white and black nonpublic school students who took AP Calculus AB with white students scoring on average 54 points higher than their black classmates. However, there was no statistically significant difference ( $t = -1.489$ ,  $p = .141$ ) between the mean math score of black public and nonpublic school students who took AP Calculus AB.

Table 14  
*Comparison of Mean NAEP Math Score of White and Black Students Relative to  
Advanced Placement Mathematics Courses Taken – Grade 12*

	<i>Public</i>				<i>Nonpublic</i>			
	White		Black		White		Black	S.E.
	Mean	S.E.	Mean	S.E.	Mean	S.E.	Mean	S.E.
Calculus AB	341.79	1.695	302.73	5.885	345.55	1.139	315.03	5.961
Calculus BC	340.29	4.268	271.31	10.805	346.25	3.175	291.83	15.11
Statistics	318.13	2.704	265.81	5.569	325.35	2.684	296.40	14.37

The two-sample t-test procedures show at  $\alpha = .05$  there was no statistically significant difference ( $t = -1.176$ ,  $p = .261$ ) between the mean math score of black public and nonpublic school students who took AP Calculus BC. However, there was a statistically significant difference ( $t = 3.794$ ,  $p = .007$ ) in the mean mathematics score for

white and black nonpublic school students who took AP Calculus BC with white students scoring on average 54 points higher than their black classmates.

As with the AP Calculus courses, at  $\alpha = .05$  there was no statistically significant difference ( $t = -2.107$ ,  $p = .062$ ) between the mean math score of black public and nonpublic school students who had taken an AP Statistics course. Unlike the AP Calculus students in the sample, there was also no statistically significant difference ( $t = 2.113$ ,  $p = .069$ ) between the mean math score of white and black nonpublic school AP Statistics students.

### Hypothesis Tests

The study's three null hypotheses presented in Chapter One are tested under the following assumptions:

- a) The mathematics scores of eighth and twelfth graders are normally distributed.
- b) The samples of black students and white students are independent.
- c) The samples of public and nonpublic school students are independent.

Since the samples referenced in the study are sufficiently large ( $n \geq 30$ ), the standard deviation ( $\sigma$ ) and mean ( $\mu$ ) for the populations of interest are unknown, two-sample t-procedures were used (Hawley, 1996). The critical value for the t-test procedures  $|t| \geq 1.960$  can be found in a standard student's t-distribution table. These procedures are used with caution, since the sample sizes are unequal and complex multi-stage probability samples rather than the recommended simple random samples (SRS) were utilized (Hawley, 1996).

The mean scale scores and standard errors (SE) needed for hypothesis testing were computed using the AM software. Where applicable, the standard deviation was computed to be the product of the standard error and square root of the sample size. The formulas for computation of the t-statistic for the two sample t-test procedures and the confidence interval for the difference of two means are presented below; however, the TI-83 calculator or AM software facilitated the computation of the t-statistics referenced in this study. The formula for the two-sample t-statistic is:

$$t = \frac{(x_1 - x_2) - (\mu_1 - \mu_2)}{SE}$$

The formula for the confidence interval for the difference of two means:

$$t = (x_1 - x_2) \pm t^*SE$$

*Hypothesis 1*

HO<sub>1</sub>. There is no difference in the performance of black nonpublic school students and the performance of white nonpublic school students on the 2000 NAEP mathematics examination.

HA<sub>1</sub>. There is a difference in the performance of black nonpublic school students and the performance of white nonpublic school students on the 2000 NAEP mathematics examination.

At grade eight, the mean scale score of white nonpublic school students on the 2000 NAEP mathematics exam was 291.372 while the mean scale score of black nonpublic school students on the exam was 258.959 (Table 15). There is enough statistical evidence ( $t = 15.194, p = 0.000$ ) to reject the null hypothesis in this case in favor of the alternate hypothesis at  $\alpha = .05$ . There is a statistically significant difference between the mean mathematics scores of white and black eighth graders in nonpublic schools.

Table 15  
*Average Math NAEP score for Grade 8 Students by Race*

SCHOOL TYPE	RACE	WEIGHTED N	MEAN MATH SCORE	S.E .
Public	White	2,127,103	284.794	0.951
	Black	441,785	246.143	1.390
Nonpublic	White	273,269	291.372	1.015
	Black	29,248	258.959	2.010



*Hypothesis 2*

HO<sub>2</sub>. There is no difference in the performance of black nonpublic school students and black public school students on the 2000 NAEP mathematics examination.

HA<sub>2</sub>. There is a difference in the performance of black nonpublic school students and black public school students on the 2000 NAEP mathematics examination.

For grade eight, the mean scale score of black nonpublic school students on the 2000 NAEP mathematics exam was 258.959 and the mean scale score of black public school students on the exam was 246.143 (Table 15). Black nonpublic school students in the sample scored on average 13 points higher than their counterparts in public schools. There is enough statistical evidence ( $t = -5.182$ ,  $p = 0.000$ ) to reject the null hypothesis in favor of the alternate hypothesis. At alpha equal .05, there was a significant difference in the mean math score of eighth grade black students in public schools compared to black students in nonpublic schools.

The mean scale score of black nonpublic school grade twelve students on the 2000 NAEP mathematics exam was 293.190 and the mean scale score of black public school students was 273.139 (Table 16). Black nonpublic school students scored 20 points higher than their counterparts in public schools. There is enough statistical evidence ( $t = -5.776$ ,  $p = 0.000$ ) at alpha equal .05 to reject the null hypothesis in favor of the alternate hypothesis. There is a significant difference in the mean math score of grade twelve black students in public schools compared to black students in nonpublic schools.

Table 16  
*Average Math NAEP score for Grade 12 Students by Race*

SCHOOL TYPE	RACE	WEIGHTED N	MEAN MATH SCORE	S.E.
Public	Black	411,174	273.139	1.766
Nonpublic	Black	19,187	293.190	3.009

*Hypothesis 3*

- HO<sub>3</sub>. There is no difference between the black-white achievement gap in nonpublic schools and the black-white achievement gap in public schools based on the average scaled scores from the 2000 NAEP mathematics examination.
- HA<sub>3</sub>. There is a difference between the black-white achievement gap in nonpublic schools and the black-white achievement gap in public schools based on the average scaled scores from the 2000 NAEP mathematics examination.

Using the average mean mathematics scale scores (Table 15) and computed standard deviation for black and white nonpublic school students in grade eight, a 95% confidence interval was calculated for the difference in the mean scores for the two populations. With a  $t^* = 1.960$ , the confidence interval for the difference in the mean scores was computed to be (28.000, 36.826). This confidence interval indicates the true mean difference between the scores of white and black eighth grade students in nonpublic schools lies between 28 and 37 points. In other words, the white-black gap in nonpublic schools at grade eight is between 28 and 37 points.

Using the data reported in Table 15, the white-black achievement gap in public schools, the difference in the average scale scores of white and black eighth graders, is 38.65 at grade eight. Since this value falls outside of the confidence interval there is

enough statistical evidence at  $\alpha = .05$  to reject the null hypothesis in favor of the two-sided alternate hypothesis ( $H_a: \mu_1 - \mu_2 \neq 38.65$ ). There is a difference in the white-black achievement gap in nonpublic and public schools at grade eight.

Using the same method, the confidence interval for the difference in the mean scores of white and black eighth graders in public schools was computed using the data in Table 15. The confidence interval was determined to be (35.350, 41.952) indicating the true mean difference in achievement scores lies between 35 and 42 points. At the 95% confidence level the size of the white-black gap public schools at grade eight is between 35 and 42 points.

Once again referring to Table 15, the white-black achievement gap in nonpublic schools, the difference in the average scale scores of white and black students, is 32.413. Since this value falls outside of the confidence interval there is enough statistical evidence at  $\alpha = .05$  to reject the null hypothesis in favor of the two-sided alternate hypothesis ( $H_a: \mu_1 - \mu_2 \neq 32.413$ ). This provides further evidence of a difference in the white-black achievement gap in nonpublic and public schools.

## Summary of Analysis

### *Enrollment Patterns*

With the exception of the 1965 and 1970 reporting periods increases or decreases in black student enrollment were met with opposite changes in white student enrollment in private schools. The most dramatic example of this type of change occurred in 1975, when black student enrollment had increased by 44 percent while white student enrollment decreased by 1 percent. Similarly, in 1990 there was a 28 percent decrease in white student enrollment was met by a 3 percent increase in black student enrollment. Since 1995 increases in black student enrollment in private schools have been paralleled by increases in white student enrollment. This trend is expected to continue through 2010 (CAPE, 2001).

Changes in black student enrollment appear to reflect changes in society, legislation and the economy. The dramatic increase in enrollment recorded in 1965 coincides with the racial tensions expressed through the civil rights movement of the sixties. Enrollment increases in the late 70's coincides with the Coleman announcement in 1975 that busing within public school districts had failed (Kiviat, 2000). Subsequent decreases in the late 80's and early 90's coincide with the slowdown in economic growth during that period for lower and middle class Americans (Miller, 1995).

During the 1990's enrollment of black and white children in private schools has been rising. The nation's focus on the shortcomings of public school system during this period may have fueled this enrollment increase. In addition, the introduction of voucher programs gave black families in failing public school districts incentives to enroll their children in private schools. In 1990 there were more than 800,000 white children in

private schools compared to 65,000 black children. Just five years later the enrollment of white children had increased to more than one million and black student enrollment had climbed to more than 100,000.

#### *Average Scale Mathematics Scores*

Since 1990, the gap between white and black eighth grade students in nonpublic schools has been narrower than the white-black gap in public schools. The smallest difference in the measurements was recorded in 1992 when the gap between white and black students in nonpublic schools was only four points narrower than the achievement gap in public schools. 1992 also marked the largest white-black for both school types, with a 36-point difference in nonpublic schools and a 40-point difference in the average scores of white and black students in public schools. Over the past decade the average difference between the mathematics achievement of white and black nonpublic students in grade eight was approximately 29 points while the average difference in public schools was 38 points.

At grade eight the mean NAEP mathematics achievement score for black private and nonpublic school students was below that of white public, private and nonpublic school students. From 1990 to 2000 the average scale score of white public and nonpublic school students increased 15 points at grade eight. During the same period the average scale score of black public school students increased nine points and black nonpublic school students increased by 10 points. In 2000 there was a 39 point difference in the mathematics achievement of white and black students in public schools compared to a 32 point difference at grade 8 in nonpublic schools as noted in Table 17 below.

Table 17

*Summary of mean math scores by noncognitive variables included in study – Grade 8*

*NAEP assessment*

	PUBLIC			NONPUBLIC		
	White	Black	Diff.	White	Black	Diff.
Average Scale Score	285	246	39	291	259	32
Positive Parental Support	286	249	37	291	259	32
Four + Lit. Articles	291	252	39	294	262	32
Good at math	301	260	41	307	273	34
Homework > 1	288	250	38	299	261	38

In 1990, the gap between white and black students at grade twelve in public and nonpublic schools was the same, 32 points. Since 1992, the gap between black and white seniors in nonpublic schools has been narrower than the gap in public schools. In 1996, the gap between white and black students in nonpublic schools was 12 points narrower than the gap between white and black students in public schools. 1996 also marked the smallest difference between the races in nonpublic schools, 19 points. In 2000 the gap between black and white students in nonpublic and private schools was 10 points and 13 points narrower than the public school gap respectively. Over the past decade the average difference in mathematics achievement of white and black nonpublic school seniors was 24 points compared to approximately 32 points for public school seniors.

At grade eight there is a statistically significant difference in the mean mathematics score of black students in public and private schools, with black private school students out performing their public school peers by an average of 13 points. This represents a difference also in achievement of the Basic level of achievement of the mathematics portion of the NAEP.

At grade twelve the mean NAEP mathematics achievement score for black private and nonpublic school students was below that of white public, private and nonpublic school students. However, from 1990 to 2000 there were increases in the average scale score of white and black students in public and private schools with private schools students experiencing the greatest gains. The average scale score of white public school twelfth graders increased seven points, compared to white nonpublic school students' scores that increased by nearly 13 points. Similarly black public school students' scores increased by only five points between 1990 and 2000, while the average scale score of black nonpublic school students increased by 21 points.

The findings suggest the gap between black and white students in nonpublic schools decreases from grade eight to grade twelve. However the gap between black students in public and nonpublic schools widens from grade eight to grade twelve. The data indicates a private school environment has a positive affect on the academic performance of black students.

In 2000, at grade eight, the average scale score for black nonpublic school students was 259 and for black private school students 262, the established cutpoint for the Basic achievement level for the mathematics examination. The average scale score for a white nonpublic school student was 291 and a white private school student was 294, 32 points higher than the cutpoint and the average score for black private school students.

At grade twelve, the cutpoint for the Basic achievement level for the 2000 mathematics examination test takers was 288. The average scale scores for black private school and nonpublic school seniors were 296 and 293 respectively. White nonpublic students earned average scale scores of 317 respectively on the 2000 exam compared to

317 for white private school students. On average, therefore, black nonpublic school test takers scored 5 points above the Basic achievement level and black private school students 8 points above the cutpoint. By comparison, the scores of white nonpublic and private school test takers were 29 points above the Basic level of achievement.

#### *Parent Support for Student Achievement*

At grade eight, more than 90 percent of school administrators in nonpublic schools reported black students received positive parental support for academic achievement compared to 75 percent of public school administrators. Nonpublic school administrators reported stronger positive parental support for their black students than public school administrators reported for their white students. As Table 17 reflects, greater parental support did not translate to higher achievement scores, however. Black students in nonpublic schools while outscoring black public school students, scored on average two points below the cutpoint for the Basic level of achievement and nearly 30 points below white students in private and public schools.

At grade twelve the views of school administrators were similar to the eighth grade sample. Private school administrators report the majority of their students, regardless of color, experience very positive support from their parents. Public school administrators report the majority of their students, regardless of race, receive somewhat positive parental support for student achievement. There was, however, a statistically significant difference in the level of positive parental support received by black students in public schools compared to black students in nonpublic schools. Fifty-five percent of



nonpublic school administrators reported black students received very positive parental support compared to 24 percent of public school administrators.

#### *Literary articles in the home*

At grade eight, nearly 70 percent of white private school students and more than 50 percent of black private school students reported there were four or more types of literary articles in their home. One-third of black public school students compared to more than 50 percent of white public school students reported there were four or more types of literary materials in their home. The average scale score for black nonpublic school eighth graders from literary rich homes was 262, the cutpoint for Basic level of achievement, yet 30 points below white public and nonpublic school students from similar homes.

At grade twelve, black nonpublic school students who reported 0-2 types of literary articles in the home on average received a scale score of 292, four points above the cutpoint for the Basic achievement level on the 2000 mathematics assessment. Ironically, the mean scale score for these students was two points above the average scale score of black nonpublic school students who reported there were three or more types of literary articles in their home (Table 11). Black nonpublic school students in literary rich homes, on average scored 20 points above black public school students from similar homes. However their average scale score was 25 points below that of white nonpublic school students. At grade eight and 12, the data indicates race has a greater influence on mathematics achievement than a literary rich home environment.

*Student Perception of Math Ability*

The majority of students in grade eight agreed that they were “good at math.” Black students’ perception of their math ability was lower than that of their white classmates, regardless of school type. Black students in nonpublic schools who reported that they were good in math received an average scale score of 273 on the mathematics assessment, 13 points above black public school students and seven points above the Basic achievement level cutpoint (Table 17). White nonpublic school students with a positive perception of their math ability scored on average 307 on the assessment, significantly higher than their black classmates.

At grade twelve, the more than 50 percent of nonpublic school students and white public school students reported that they were “good at math.” Approximately 49 percent of black public school students reported that they were “good at math” and nearly one-third reported that they were not “good at math.” Black twelfth graders in nonpublic schools who reported that they were good in math received an average scale score of 301 on the mathematics assessment, 3 points above the cutpoint for the Basic level of achievement and 7 points above black public school students (Table 18). White nonpublic school students with a positive perception of their math ability scored on average 328 on the assessment, significantly higher than their black classmates. As Table 18 reflects, the gap between black and white students in public and nonpublic schools was wider among students with a positive perception of their mathematical ability than the gap between the two groups as a whole.

Table 18

*Summary of mean math scores by noncognitive variables included in study – Grade 12*

*NEAP 2000 Examination*

	Public			Nonpublic		
	White	Black	Diff.	White	Black	Diff.
Average Scale Score	307	273	34	317	293	24
Four + Lit. Articles	311	276	35	320	294	26
Good at math	318	283	35	328	301	27
AP Calculus AB	342	303	39	346	315	31
AP Calculus BC	340	271	69	346	292	54
AP Statistics	318	266	59	325	296	29

#### *Time Spent Doing Homework*

The majority of black nonpublic school eighth graders reported that they spent more than one hour on homework each day. By comparison, thirty-eight percent of white nonpublic school students and 25 percent of public school students reported spending more than one hour on homework each day. Black nonpublic school students who spent more than one hour each day on homework received an average scale score of 261 on the mathematics assessment, 10 points above black public schools students and nearly 40 points below the mean score for white nonpublic school students in this category.

#### *AP Mathematics Courses*

White students, regardless of school type, participate in AP level mathematics courses at a greater rate than black students. A larger percentage of black nonpublic school students compared to black public school students took AP Calculus AB.

Participation rates for black public and nonpublic school students, in AP Calculus BC,

the higher level calculus course, were virtually the same. A higher percentage of black public school students took AP Statistics compared to black nonpublic school students.

The mean mathematics score for black nonpublic school students who took AP Calculus AB and AP Calculus BC were 315 and 292 respectively (Table 14). The mean mathematics score for black public school students who took AP Calculus AB and AP Calculus BC were 303 and 271 respectively. The average scale score of white public school students enrolled in either course was approximately 341 and for white nonpublic school students the average scale score was 346. Unlike white students, the average score for black students enrolled in the higher calculus course, AP Calculus BC, was lower than the mean for students enrolled in AP Calculus AB. As Table 18 reflects, there was more than a 20-point difference in the mean math scores for black public and nonpublic school students enrolled in AP Calculus BC.

Black nonpublic school students who had taken AP Statistics received a mean score of 296 on the mathematics assessment compared to 265 for black public school students and 325 for white nonpublic school students. There was no statistically significant difference in the scores of black nonpublic school students compared to black public school students or white nonpublic school students who had taken AP Statistics.

## CHAPTER 5

### DISCUSSION AND CONCLUSIONS

#### Summary of Problem and Methodology

Is there an achievement gap in private secondary schools? If a gap in achievement does exist, is the gap between black and white students in private schools significantly different from the achievement gap in public secondary schools? This study explores these questions using statistical inference and a quantitative descriptive method of analysis of National Assessment of Education Progress (NAEP) data. The study describes the achievement gap between black and white students in nonpublic secondary schools and examines the variables that may contribute to the gap. In addition the achievement of black secondary nonpublic school students is compared to the achievement of black public school students. Studies have investigated the achievement and social adjustment of black students in predominately white private schools (Lee, 1998); however, little attention has been given to the academic achievement of black students in private schools relative to their white peers. The study will contribute to the limited research that examines how school type affects the academic achievement of black secondary school students measured by their average performance on the NAEP mathematics examinations. For the grade eight and twelve NAEP mathematics assessments, this study

examines selected variables including the mean mathematics scale score, time spent doing homework each day, parental support for student achievement, literary articles in a student's home, student's self perception of mathematics ability, and access to higher level mathematics courses.

For the purposes of this study, educational achievement is defined as attaining minimum competency scores on select standardized tests. The study utilizes 2000 National NAEP mathematics examination scores for grades eight and twelve for comparative analysis. For the 2000 examination, the National Assessment Governing Board determined grade eight students who earned at least an average score of 262, on a scale ranging from 0 to 500, perform at a "basic" level of achievement in mathematics. Similarly, grade twelve students earning at least an average score of 288 perform at a "basic" level of achievement (U.S. Department of Education, NCES 2001 a). In this study, the achievement gap is defined as the difference in NAEP Mathematics scores of black and white students.

Raising academic achievement of black children and narrowing the gap in achievement between white and minority children in public schools has become part of the national political agenda during the past decade. Given the strong correlation between an individual's level of education and socioeconomic status, the quality of an individual's education has the potential to influence his or her quality of life (Lee, 1998; Jencks & Phillips, 1998). Academic achievement in American society translates to greater opportunities for employment and higher income. Low academic performance traps individuals in low paying jobs and limits chances for social mobility and advancement (Jencks & Phillips, 1998).

Since the early seventies the enrollment of black students in private schools has been on the rise. Closing the achievement gap, therefore, should be as high a priority for private school communities as it is in public school communities. Just as successful public schools serve as models for closing the achievement gap, private schools may serve as laboratories to confirm or refute educators' theories regarding proposed practice and policy changes targeting a narrowing of the achievement gap in public schools (Cookson, 1997). The findings of this study provide educators in private schools with measurement data to improve learning opportunities in their classrooms. Evidence of a narrower achievement gap in private schools provides public school administrators with valuable data and benchmarks for improving public education.

### Study Design

The methodology utilized for this study can be described as a quantitative descriptive analysis of grade eight and twelve NAEP data from the National Center for Education Statistics. Statistical inference procedures were used to identify differences in select noncognitive characteristics and in the academic performance of black and white students in public and nonpublic schools. Two-sample t-tests and tests for homogeneity were conducted to test for significant differences in the mean scores and proportion of select noncognitive characteristics for black and white students by school type.

The resources surveyed as part of this study were identified through extensive Internet search utilizing available meta search engines. This search uncovered numerous journal articles, dissertations and statistical studies addressing student achievement; however, there was a minimal amount of data focused on black student achievement in

private schools. Most reports and statistical digests examined in the study were free publications secured via mail order and temporary access to the NAEP databases was arranged under restricted use. The NAEP files were imported into SPSS and AMS software to perform descriptive and inferential analysis of the large NAEP data sets. Excel software was used to create tables and graphs to facilitate data analysis.

### Summary of Research and Findings

Research conducted in the sixties by James Coleman (Kiviat, 2000) concluded that the academic achievement of students was tied to the social composition of the school, verbal skills of the teachers, students' sense of control of their environment and future, and students' family background (Beisner, 1999; Kiviat, 2000). Contemporary research has concluded that black children perform better in smaller classrooms and in private or parochial schools (Closson, 1994; Slaven, 2001). On the other hand, poverty, low teacher expectations and negative racial stereotypes have a negative affect on black student achievement (Viadero, 2000).

Despite the widespread opinion that private schools are reserved for wealthy white students, there was no significant difference in the racial composition of the nonpublic and public school samples in the study. Private schools draw from diverse communities and may be less homogeneous than public schools which tend to be all-black or all-white. Approximately 20 percent of public school students compared to 16 percent of private school students are students of color (U. S. Dept. of Education, 2001 c). Between 1975 and 1990 there appears to have been an inverse relationship between the percentages of enrollment of black and white students in private schools. However,



since 1990 the enrollment of both black and white students in private schools has been on the rise.

Parents believe smaller schools and classes translate to more individual attention from teachers and higher academic achievement for their children. Studies have shown that the most successful schools have an enrollment of 200 to 500 students (Cotton, 2001). More than two-thirds of private secondary schools have less than 500 students and two-thirds have less than 300 students (U. S. Dept. of Education, 2002). In 1999 the average class size for public secondary schools was 14, for private secondary schools 12 and for Catholic schools the average class size was the largest at 20 students (CAPE, 2001). Current research has found that class size reductions result in an increase in student achievement and a decrease in the achievement gap between black and white students (Krueger & Whitemore, 2001; Hopkins, 1999).

Most adults believe private schools are better than public schools at providing students with smaller class sizes, high quality teachers, high academic standards, discipline, and a positive learning environment (NAIS, 2001). While parents may believe private school teachers are more highly qualified than public school teachers, there is no certification requirement for private school teachers and a higher proportion of public school teachers hold masters level degrees. A higher proportion of private school teachers, however hold doctorates compared to public school teachers (U. S. Dept. of Education, 2001 c).

Parents believe private school teachers have higher expectations for student achievement than public school teachers (Norris 2002). Private schools have a higher minority graduation rate and college application rate than public schools. Private schools

with majority minority enrollment had a 97% graduation rate and an 80% college application rate compared to a 90% graduation rate and 54% college application rate in public schools with similar demographics.

White and black parents select private schools for different reasons. Many white parents select private schools because they believe their child's access to select colleges or ability to meet career aspirations will be improved (Per Lee, 1994). Most black parents, however, select private schools because they are looking for a safer and more structured learning environment for their children (Peterson et al, 1996; Gholson-Driver, 2001; Norris, 2002).

Black parents hope private schools will provide their children with a strong academic program and high academic standards (Gholson-Driver, 2001). Black students in private schools are outperforming their public school peers on the NAEP assessments; however, on average they are not performing on par with their white classmates.

This study found at grades eight and twelve, white private school students outperformed black private school students on the NAEP mathematics examination throughout the past decade. While an achievement gap does exist in private or nonpublic schools, the gap between white and black nonpublic school students is narrower than the achievement gap in public schools at grades eight and twelve. The study found a statistically significant difference in the performance of white nonpublic school students and black nonpublic school students on the 2000 mathematics examination at grades eight and twelve.

At grade eight, the average difference between the mean scale score of white and black nonpublic school students was 31 points compared to approximately 38 points for

public school students. In 1990 the gap between white and black public school eighth graders was 33 points and by the end of the decade the gap had increased to 39 points. After peaking at 36 points with the 1992 assessment, by the year 2000, the gap between white and black eighth graders in nonpublic schools had decreased to 32 points.

At grade twelve, the average difference between the mean scale score of white and black nonpublic school students was 24 points compared to approximately 32 points for public school students. The gap between white and black public high school seniors was 32 points in 1990 and increased by only 2 points by the end of the decade. The gap between white and black nonpublic school students was 32 points in 1990, however, the gap decreased to 24 points by 2000.

Studies have found that black students perform better in private and Catholic schools relative to their public school peers (Keith, 1982; Peterson & Howell, 2001). This study also found that black private school students did outperform black public school students on all four national mathematics assessments during the past decade. At grade eight, the average difference in the mean scale score of black nonpublic school students and black public school students was approximately 14 points. At grade twelve, the average difference in the mean scale score of black nonpublic and public school students was approximately 16 points. This study found a statistically significant difference in the performance of black nonpublic school students and black public school students on the 2000 mathematics examination at grades 8 and 12.

With the exception of 1990, the gap between white and black seniors in public and nonpublic schools has been narrower than the gap between eighth graders. Conversely, the data indicates the gap between black students in nonpublic and public

schools widens from grade eight to grade twelve. Since 1992 the gap between black and white eighth grade public school students has remained relatively the same while the difference in achievement between black and white nonpublic school students in grade eight has decreased. The achievement gap between seniors in public and nonpublic schools declined between 1990 and 1996; however both school types experienced an increase in the size of the gap in 2000.

The mean scale score for black nonpublic and private school eighth grade students for the 2000 NAEP mathematics assessment was 262, the cutpoint for the Basic level of achievement on the examination. Black public school eighth graders on average performed below the Basic level of achievement. The average scale scores of white public and nonpublic school students at grade eight were 285 and 291 respectively, above the cutpoint for the Basic level of achievement yet below the score for the Proficient level of achievement, 299.

At grade twelve, the average scores for black nonpublic or private school students were above the cutpoint for the Basic level of achievement, 288, on the 2000 NAEP mathematics examination and 20 points above 272, the average score of black public school students. In 2000, the average scale score of white public school seniors was 307 and white nonpublic school seniors 317.

The majority of private school administrators reported that their students receive very positive support from parents whereas the majority of public school administrators reported their students receive somewhat positive parental support for academic achievement. There was no change in the average scale score of nonpublic school students with positive parental support compared to the average scale scores in the

overall nonpublic school sample. In contrast, positive parental support did impact the average scale scores of students in public schools. There was a 3-point increase in the average scale scores of black students and a one-point increase in the average scale scores of white students with positive parental support in the public school sample. Positive parental support had no impact on the size of the gap for nonpublic school students; however, there was a two-point decrease in the gap between black and white public school students with positive parental support for their achievement.

Ferguson (2002) believes the availability of resources such as books in the home may explain some of the disparities in achievement between black and white students. The majority of white public school students, black nonpublic and white nonpublic school students in the study reported there were four or more types of literary articles (newspapers, encyclopedias, magazines and large quantities of books) in their home. Only one-third of black public schools students reported there were four or more types of literary materials in their homes. At grade eight, the average scale score of black and white nonpublic school students with four or more types of literary material in the home increased by three points while the average among black and white public school students in this subgroup increased by six points. While a literature-rich home environment increased the average scale scores of the subgroups, there was no impact on the size of the achievement gap between the subgroups for both school types.

At grade twelve there was a three-point increase in the average scale score of white and black public school students and white nonpublic school students who lived in literature-rich homes. The average scale score of nonpublic school students who reported there were four or more types of literary articles in their home was only one-point higher

than the average for the subgroup in the overall sample. There was no impact on the size of the achievement gap between black and white students in public schools; however among black and white nonpublic school students from literary rich homes there was a two-point increase in the gap.

White students have a more positive perception of their mathematics ability than black students regardless of the grade or school type. Students with a positive perception of their mathematics ability had a higher mean scale score than the students in the general sample regardless of race. At grade eight, the achievement gap between black and white nonpublic school students with a positive perception of their mathematics ability increased by 2 points to 34 and among public schools students the gap widened by 3 points to 42 points. At grade twelve the gap widened among nonpublic schools students 4 points compared to a one-point increase in the size of the gap between black and white public school students.

Black students in nonpublic schools spend more time on homework compared to the students in the other three subgroups. The majority of black nonpublic school students reported they spent more than an hour on homework compared to one-third of white nonpublic school students and one-quarter of black and white public school students. Spending more than an hour on homework resulted in an increase in the average scale score for all subgroups. Among public schools students who spent more than an hour on homework there was a two-point decrease in the achievement gap. However, there was a four-point increase in the gap between black and white students who spent more than an hour on homework.

The College Board reports a dramatic increase in the enrollment of black student in Advanced Placement courses since the exam was first offered in 1951. The College Board (1999 a) found that students of all races who took higher-level mathematics courses achieved higher scores on the SAT's. Current statistics reflect Catholic schools offer fewer AP Courses than the average public or nonsectarian private schools.

In the 2000 NAEP mathematics sample a greater proportion of white students participate in Advanced Placement courses compared to black students regardless of school type. A higher proportion of black nonpublic school students than black public school students take Advanced Placement Calculus courses, however, a higher proportion of black public school students take Advanced Placement Statistics.

While the merits of using the mean scale scores on the NAEP mathematics assessment as a measure of achievement differences between Advanced Placement students is questionable, the results of this study's analysis of the data is compelling. The average scale score of students enrolled in AP Calculus AB was higher than the average scale score of students in the general sample regardless of race or school type. The average scale score of white students enrolled in AP Calculus BC was higher than the average scale score of white students in the overall sample. However, the mean mathematics scores for black public and nonpublic school students enrolled in AP Calculus BC decreased by two points and by one point respectively. The mean mathematics score of white students and black nonpublic school students enrolled in AP Statistics was higher than the average scale score for these subgroups in the general sample. Unexpectedly, the average scale score of black public school students who took

AP Statistics was seven-points lower than the average for this subgroup in the overall sample.

Many educators believe students should be extended intellectually and placed in courses that require higher-level thinking rather than place them automatically in general courses (Varner, 1999). The analysis of the data in this study indicates that participation in AP level mathematics courses does not have a positive impact on black student achievement relative to white students. The gap between black and white students in public and nonpublic schools enrolled in AP mathematics courses widened by at least 5-points. The achievement gap among public school AP Statistics students increased from 34 to 54 points. The data shows the gap between white and black students actually doubled among AP Calculus BC students in both public and nonpublic schools.

#### Policy Implications

U.S. Secretary Rod Paige stated "some states are embarrassed to report student performance by race, because it is embarrassing to defend a system that sells black kids short" (Cobb, 2002, p.3). Private schools should report student performance by race; however, disclosure of unfavorable academic results could have a devastating effect on tuition-driven schools. Despite this risk of negative exposure, the National Association of Independent Schools should encourage its membership to track placement in honors level or Advanced Placement courses, GPA, and acceptance to competitive colleges by race. The data should be tracked by at least five major racial categories, white, and black, Hispanic, Asian American and Native American and at minimum to the level necessary to gather information for all of the races represented within the student body. This



information will be key to determining if counselor bias (Bronkhurst, 1996) or other factors impact minority student achievement and access to the rigorous courses necessary for entrance to the most competitive colleges.

To encourage accountability and improve the value and validity of reported results for nonpublic schools, the NCES should increase the representation of NAIS schools in its nonpublic school sample. The NCES should also publish achievement scores by race and school type and regularly report achievement differences noted in nonpublic schools. In addition, nonpublic schools should be mandated to meet the same minimum standards for student proficiency required of public schools.

School administrators and boards should use student body demographic information and test scores to establish a baseline measurement of the achievement gap at their school. Gaps in achievement can be compared to national as well as state statistics available from the NCES website. The College Board also provides schools with summary reports of SAT and AP scores. These reports should be reviewed annually to quantify gaps in achievement by race.

Encouraged by a study that found students test scores improve when taught by a teacher of their own race, the National Black Caucus recommends school districts "recruit more male and minority candidates into teaching" (Borja, 2001). In 1994 only 12% of public school teachers and 6.5% of private school teachers were non-white. The NAIS reported that 8% of independent school faculty were people of color during the 2001-2002 school year. Efforts must be made by private school administrators to recruit and retain teachers of color.

### Practice Implications

Just as national goals have been established for the achievement of minimum competency levels on the NAEP for public schools, private schools must establish goals for the reduction of the achievement gap in their schools. A standard or tolerance level for the size of the gap and group representation within advanced placement and honors level courses must be established. For example, if the student body is 10 percent black, should the percentage of black students enrolled in AP courses be nearly 10 percent? Or if there is a 20-point gap in SAT scores between black and white students, specific strategies to reduce the gap and a target date for achieving this reduction should be defined.

This study found that the achievement gap was wider between students enrolled in higher level, Advanced Placement mathematics courses. The criteria by which students are placed in honors or AP-level courses should be scrutinized to insure that all students, regardless of race, are placed in an academic environment where they can be successful. In addition, enrollment levels across individual AP courses should be examined by race.

### Future Research

Research has found a strong correlation between the quality and strength of curriculum and students' high school completion, entering college and completing a bachelor's degree (U.S. Dept. of Education, 2001 f). Subsequent studies should investigate differences in class rank, GPA, strength of curriculum, credits earned, and courses taken by race/ethnicity and by school type.

The College Board's SAT and AP data should be examined to determine if achievement gaps similar to those uncovered with the NAEP achievement scores exist in private schools. Where possible, average SAT math and verbal scores by race and school type – private, parochial, and public – for the past decade should be examined. Similarly AP course data (course grades and examination scores) should be examined by course, race and school type. A qualitative study should accompany this research to identify variables that may explain the gap in performance in the SAT and AP exams. For example, are there differences in the SAT and AP examination preparation strategies for white and black students?

Parent education level was not examined in this study, as the NAEP information regarding parent education level is student reported and thus may be unreliable. An independent study of private secondary school student achievement measured by GPA, SAT, AP and NAEP examination scores should be conducted considering factors such as socioeconomic status, parent level of education, number of parents working outside of the home, school location, and race. Correlations between race and the number of employed parents, for example, may explain differences in the time spent on homework uncovered in this study. Whenever possible, future studies should capture data by nonpublic school type in an attempt to control for variances between private, parochial and independent school environments.

Differences in the size of the achievement gap at grade 4 for public and nonpublic school students should be identified. This study could be replicated to examine the achievement gap in private preschool and elementary schools. It would also be value to identify the ways that private preschool and elementary schools promote the development

of cognitive skills compared to public schools. A study that examines academic achievement differences and follows a racially mixed cohort of public and nonpublic school students in grades 4, 8 and 12 will highlight the behavior of the gap as students complete a K-12 private school education. This subsequent study could also examine potential differences associated with the point at which a student enters the private school setting, i.e. preschool, elementary, middle school, high school.

This study focused on mathematics achievement with respect to advanced level mathematics courses studied and other variables. The study should be extended to address achievement in reading and other areas of study such as Civilization, Foreign Language, and the Sciences. In addition the after school activities and television viewing habits of black nonpublic school student relative to their white peers and black students in public schools should be investigated.

This study excluded achievement differences between students of other races in nonpublic schools, however, the achievement differences between white, black, Asian, Hispanic, and Native American students in nonpublic schools warrants investigation. With the increased immigration of Africans and West Indians to the United States in the past decade, the black population has become more heterogeneous (US. Bureau of Census, 2001). Further research is needed to determine the relationship between cultural assimilation and academic achievement among black children. What are the differences in expectations for academic achievement, delivery of instruction, and parent-school communications among black people of different ethnic backgrounds? Are there differences in parenting styles for black children in nonpublic schools compared to black students in public schools?

The National Center for Educational Statistics will be required to follow the U.S. Bureau of Census guidelines in the future regarding race designations in the future. Individuals will no longer be required to select one racial category; instead participants will be permitted to select all categories that apply to their ethnic identify (Carr, 2002). The impact of this change on the ability to track and report on academic achievement trends by race must be determined.

### Conclusion

This study found that while narrower than the achievement gap in public schools, there is an achievement gap between white and black students in nonpublic and private schools measured by their performance on the NAEP mathematics exam. This gap has narrowed during the past decade while the achievement gap in public schools has widened. The achievement gap in private and nonpublic schools is narrower in grade twelve compared to grade eight.

The study yielded some surprising results with regards to achievement differences between black and white students. Current strategies to improve academic achievement may result in incremental increases in test scores for all test takers; however, these strategies may not narrow the gap in achievement between black and white children. The achievement gap widens, for example, among students with a positive perception of their mathematical ability and among students enrolled in Advanced Placement courses. The study did confirm contemporary research that asserts positive parental support has a positive impact on student achievement and may help narrow the gap in achievement between black and white students. Incremental increases in time

spent doing homework or literature-rich homes environment also improves achievement scores; however, the effect on the size of the achievement gap was conflicting. In public schools additional time spent on homework decreased the gap while the gap increased in nonpublic schools. At grade eight, greater numbers of literary articles in the home had no impact on the size of the achievement gap. While at grade twelve, greater numbers of literary articles had no impact on the achievement gap in public schools, the gap widened in nonpublic schools.

This study confirms black students are performing better in the smaller classrooms found in private schools. The data shows black students in nonpublic schools outperform black public school students and the gap between the groups widens from grades eight to twelve. Black parents, however, should not be complacent with small gains in achievement experienced in private schools. Black parents should demand private schools be accountable and forthcoming with regard to achievement differences by race in their schools. In addition, black parents should communicate their desire for improved educational achievement to their children and reinforce this desire by curtailing television, monitoring homework and establishing higher performance standards (Belluck, 1999).

National initiatives to close the achievement gap should begin in earnest and include nonpublic schools. As former Secretary of Education, Lamar Alexander suggested, "The definition of 'public school' should be broadened to include any school that serves the public and is held accountable by a public authority" (Rhoads, 1992, p.11). The "Partnership for Academic Achievement" between the Department of Education and the leaders within the African American community should invite representatives from

the private school arena to take part in these educational reforms. Private school administrators should regard the increasing gap in achievement between white and black students at grades eight and twelve as an issue of grave concern. Local public school administrators and private school administrators should also view initiatives to improve academic achievement as opportunities for collaboration through joint-offerings of professional development workshops and lectures to share best practices and educate their teaching staffs about the existence and nuances of the achievement gap. The achievement gap should be regarded as a national problem and in the battle to close the gap, public and private schools should not regard themselves as adversaries.

Closing the achievement gap between male and female students was at the forefront of the national political and education reform agenda during the seventies and eighties. The gender gap reform movement resulted in a substantial rise in female enrollment in colleges, participation in the sciences, mathematics and technical fields as well as improvement in their academic achievement in math and science in schools. Should the nation embrace the initiative to close the achievement gap between black and white students with the same passion and commitment, black Americans can be assured improvement in the quality of education relative to their white peers which translates into gains in employment opportunities for the future. A variety of policies are needed to narrow the black-white achievement gap in public and private schools. It may take more than one generation to accomplish (Rothstein, 1999); however, if the nation approaches the problem with a sense of urgency it can be done.

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Appendix A

Institutional Review Board Approval Form

Department of Educational Administration and Supervision

APPLICATION FOR STUDIES NOT APPROPRIATE FOR IRB REVIEW

Approved ☒ Disapproved ☐ Signature Elaine M. Walli 11/23/03  
Shoupy H. B. M. W.

1. Student's Name Denise M. Brown-Allen
2. Mentor's Name Dr. John Collins, Ed.D.
3. Dissertation Title A Quantitative Descriptive Study  
of Black Student Educational Achievement  
in Private Schools

4. Purpose of the study. Attach a separate sheet if additional space is needed.

Please see attached

5. Data Sources (List all sources, describe what information will be collected from each source). Attach a separate sheet if additional space is needed.

Please see attached

Student's signature Denise Brown-Allen Date 11/25/02

Note: Three copies of this form must be submitted with a copy of your Proposal Approval Signature Sheet.

Appendix B

NAEP Database Training Program Certificate of Participation

## MEMORANDUM

TO: Participants for the NAEP Database Training Seminar  
FROM: Patricia St. Rose  
SUBJECT: Hotel and Travel Arrangements  
DATE: May 23, 2002

On behalf of the National Center for Education Statistics (NCES), I would like to congratulate you on your acceptance into the NAEP Database Seminar, to be held at **The Bolger Center, 9600 Newbridge Drive, Potomac, Maryland 20854 (telephone: 301.983.7000)**, beginning at 8:30 a.m. on **Monday, June 17<sup>th</sup>**, and concluding at noon **Thursday, June 20<sup>th</sup>, 2002**.

Synectics for Management Decisions, Inc., will handle all of the logistical arrangements for this meeting, and will pay for transportation, hotel accommodations, and a fixed per diem for meals and incidental expenses for each participant during the meeting. A package containing an agenda, reimbursement forms, reimbursement guidelines, and other pertinent information will be e-mailed prior to the seminar.

A block of rooms has been reserved for **Sunday, June 16<sup>th</sup>**, through **Thursday, June 20<sup>th</sup>**. If you will not be staying at the hotel during these dates, please check the appropriate box on the travel arrangement form (attached). Should you wish to stay any additional nights, you will be responsible for the reservations, as well as the additional cost. Local participants will be expected to commute. **Approximately two weeks prior to the seminar, hotel confirmation numbers will be e-mailed to each participant.** [Note: The hotel provides an iron, ironing board, hairdryer, coffeemaker, and dataport access for laptops in each room. Coin-operated washers and dryers are also available.]

**Check-In**  
**After 3:00 p.m. Sunday, June 16<sup>th</sup>**

**Check-Out**  
**12:00 p.m. Thursday, June 20<sup>th</sup>**

To make **air or train reservations**, please call Ana (xt.108, avail. Mon., Wed., & Fri.) or Viera (xt. 107, avail. Mon., Tues., Thurs., & Fri.) at Travel Horizons, at 800.338.9946 or 703.524.1606 between 8:30 a.m. and 5:30 p.m. EST. **Be sure to identify yourself as a NAEP Database Seminar participant.** The cost of the airline or train ticket will be directly billed to Synectics. We will not be responsible for excess costs, circuitous routes, delays, or luxury accommodations and services that are unnecessary or unjustified for travel to and from the meeting. **Prior to ticketing, itinerary changes can be made at no additional charge.** Participants will be responsible for paying any associated fees for changes made after ticketing.

If you have to cancel your trip for any reason, and have already booked your ticket, you must reimburse Synectics for the cost of that ticket, as you will be the only individual able to use that ticket for future travel.

**It is important to note that NAEP participants are required to attend all sessions of the seminar. Those failing to meet this requirement will forfeit their reimbursement.**

I look forward to welcoming you at the upcoming NAEP Database Seminar. Should you have any concerns, problems, or questions, I will be available throughout the seminar to assist you.

**IMPORTANT REMINDERS**

- 1. Hotel confirmation numbers will be e-mailed to each participant approximately two weeks prior to the seminar.*
- 2. The seminar concludes at 12:00 p.m. on the last day; therefore, please make your reservations accordingly. Be sure to allow sufficient time for transfer to the airport.*



U.S. DEPARTMENT OF EDUCATION  
Office of Educational Research and Improvement  
National Center for Education Statistics



This certifies that as of June 20, 2002

**Denise Brown-Allen**

has satisfactorily completed a training program on the use of the  
National Assessment of Educational Progress (NAEP) Database

*Gary W. Phillips*

Gary W. Phillips, Ph.D.  
Deputy Commissioner, NCES

*Samuel S. Peng*

Samuel S. Peng, Ph.D.  
Director of Training Programs

June 20, 2002

Date

## Appendix C

Closing the Achievement Gap: Challenges, Questions & Solutions  
Validation of Forum Attendance

## Appendix D

Grade 8 Public and Nonpublic NAEP 2000 Mathematics Assessment

AMS Processing Summary

## Warning # 3211

>On at least one case, the value of the weight variable was zero, negative,  
 >or missing. Such cases are invisible to statistical procedures and graphs  
 >which need positively weighted cases, but remain on the file and are  
 >processed by non-statistical facilities such as LIST and SAVE.

## Crosstabs

## Public School Only - Weighted

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
TIME SPENT ON HOMEWORK EACH DAY * DERIVED RACE	3231286	92.6%	258088	7.4%	3489374	100.0%
PARENT SUPPORT FOR STUDENT ACHIEVEMENT * DERIVED RACE	3263524	93.5%	225850	6.5%	3489374	100.0%
HOME ENVIRONMENT - ARTICLES (OF 4) IN HOME * DERIVED RACE	3231287	92.6%	258087	7.4%	3489374	100.0%
AGREE I AM GOOD AT MATH * DERIVED RACE	3231288	92.6%	258086	7.4%	3489374	100.0%
AGREE STUDENTS CAN DO WELL IN MATHEMATICS IF TRY * DERIVED RACE	3231284	92.6%	258090	7.4%	3489374	100.0%
WHICH RACE/ETHNICITY BEST DESCRIBES YOU * DERIVED RACE	3231287	92.6%	258087	7.4%	3489374	100.0%

>Warning # 3211

>On at least one case, the value of the weight variable was zero, negative,  
>or missing. Such cases are invisible to statistical procedures and graphs  
>which need positively weighted cases, but remain on the file and are  
>processed by non-statistical facilities such as LIST and SAVE.

## Crosstabs

### Non-public School Only - Weighted

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
TIME SPENT ON HOMEWORK EACH DAY * DERIVED RACE	348437	99.5%	1796	.5%	350233	100.0%
PARENT SUPPORT FOR STUDENT ACHIEVEMENT * DERIVED RACE	331636	94.7%	18597	5.3%	350233	100.0%
HOME ENVIRONMENT - ARTICLES (OF 4) IN HOME * DERIVED RACE	348435	99.5%	1798	.5%	350233	100.0%
AGREE I AM GOOD AT MATH * DERIVED RACE	348437	99.5%	1796	.5%	350233	100.0%
AGREE STUDENTS CAN DO WELL IN MATHEMATICS IF TRY * DERIVED RACE	348434	99.5%	1799	.5%	350233	100.0%
WHICH RACE/ETHNICITY BEST DESCRIBES YOU * DERIVED RACE	348438	99.5%	1795	.5%	350233	100.0%

## Appendix E

Grade 8 Public and Nonpublic NAEP 2000 Mathematics Assessment

SPSS Processing Summary

## Grade 8 NAEP 2000 Frequencies

## Frequencies

## Public School Grade 8 - Weighted

## Statistics

## DERIVED RACE

N	Valid	3489374
	Missing	0

## DERIVED RACE

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid WHITE	2271944	65.1	65.1	65.1
BLACK	492043	14.1	14.1	79.2
HISPANIC	526155	15.1	15.1	94.3
ASIAN	134548	3.9	3.9	98.1
AMERICAN INDIAN	60105	1.7	1.7	99.9
UNCLASSIFIED	4579	.1	.1	100.0
Total	3489374	100.0	100.0	

>Warning # 3211

>On at least one case, the value of the weight variable was zero, negative, or missing. Such cases are invisible to statistical procedures and graphs which need positively weighted cases, but remain on the file and are processed by non-statistical facilities such as LIST and SAVE.

## Statistics

## DERIVED RACE

N	Valid	350233
	Missing	0

## Non-Public Grade 8 - Weighted

## DERIVED RACE

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid WHITE	274945	78.5	78.5	78.5
BLACK	29283	8.4	8.4	86.9
HISPANIC	29277	8.4	8.4	95.2
ASIAN	11471	3.3	3.3	98.5
AMERICAN INDIAN	3802	1.1	1.1	99.6
UNCLASSIFIED	1455	.4	.4	100.0
Total	350233	100.0	100.0	

>Warning # 3211

>On at least one case, the value of the weight variable was zero, negative, or missing. Such cases are invisible to statistical procedures and graphs which need positively weighted cases, but remain on the file and are processed by non-statistical facilities such as LIST and SAVE.

Appendix F

Grade 8 Public and Nonpublic NAEP 2000 Mathematics Assessment

NAEP Data Tool v2.0 Report of Average Scale Scores



NAEP Data Tool v2.0 - Data Table

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National/Mathematics Composite/Accommodations Not Permitted/Grade 8/2000, 1996, 1992 and 1990  
Student race/ethnicity used for NAEP reporting (based on student responses to two background questions) (student-reported) *RACE/ETH*  
Average Scale Score and Row Percentage (with Standard Errors in Parentheses)

OVERALL

Year	N Score (S.E.)	White		Black		Hispanic		Asian Amer/Pacif Isl		Amer Ind/Alaska Natv		Missing	
		Avg.	Pct. (S.E.)	Avg.	Pct. (S.E.)	Avg.	Pct. (S.E.)	Avg.	Pct. (S.E.)	Avg.	Pct. (S.E.)	Avg.	Pct. (S.E.)
2000	15694	286 (0.8)	67% (0.2)	247 (1.4)	13% (0.1)	253 (1.5)	14% (0.2)	289 (3.4)	4% (0.4)	255 (8.3)	2% (0.4)	---	0% (0.1)
1996	7146	282 (1.2)	69% (0.2)	243 (2.0)	14% (0.2)	251 (2.0)	12% (0.1)	---	---	284 (3.0)	1% (0.2)	---	0% (0.1)
1992	7663	278 (1.0)	70% (0.2)	238 (1.3)	16% (0.1)	247 (1.2)	10% (0.2)	288 (5.4)	3% (0.2)	255 (2.8)	1% (0.2)	---	1% (0.1)
1990	3431	270 (1.4)	71% (0.3)	238 (2.7)	15% (0.2)	244 (2.8)	10% (0.2)	279 (4.8)	2% (0.5)	246 (9.4)	2% (0.6)	---	0% (0.1)

SCHOOLS-PUBLIC/NONPUBLIC

Year	N Score (S.E.)	White		Black		Hispanic		Asian Amer/Pacif Isl		Amer Ind/Alaska Natv		Missing	
		Avg.	Pct. (S.E.)	Avg.	Pct. (S.E.)	Avg.	Pct. (S.E.)	Avg.	Pct. (S.E.)	Avg.	Pct. (S.E.)	Avg.	Pct. (S.E.)
2000	9353	285 (0.9)	66% (0.5)	246 (1.5)	14% (0.2)	252 (1.6)	15% (0.2)	288 (3.7)	4% (0.4)	261 (5.6)	1% (0.2)	---	0% (0.1)
1996	5590	281 (1.4)	68% (0.5)	242 (2.1)	15% (0.4)	250 (2.1)	13% (0.3)	---	---	263 (3.3)	1% (0.3)	---	0% (0.1)
1992	6033	277 (1.1)	69% (0.4)	237 (1.3)	16% (0.2)	245 (1.3)	10% (0.3)	287 (6.5)	2% (0.2)	255 (2.9)	1% (0.2)	---	1% (0.1)
1990	2879	270 (1.5)	70% (0.5)	237 (2.8)	16% (0.3)	242 (2.8)	10% (0.4)	279 (5.4)	2% (0.5)	244 (9.0)	2% (0.7)	---	0% (0.1)
2000	6305	291 (1.2)	78% (1.5)	259 (2.2)	8% (1.2)	273 (1.6)	9% (2.0)	300 (2.1)	3% (0.5)	267 (3.0)	1% (0.4)	---	0% (0.1)
1996	1556	288 (2.0)	80% (3.4)	259 (5.9)	7% (2.5)	267 (5.4)	9% (1.4)	---	---	---	---	---	0% (0.1)
1992	1630	285 (1.9)	77% (2.3)	250 (6.0)	9% (1.4)	263 (3.7)	9% (1.5)	294 (4.6)	4% (0.7)	---	---	---	1% (0.1)
1990	552	276 (1.9)	75% (5.5)	---	8% (2.8)	255 (4.9)	14% (3.7)	---	3% (1.0)	---	1% (0.3)	---	0% (0.1)

SCHOOLS-PUBLIC/CATHOLIC/OTHER NONPUBLIC

Year	N Score (S.E.)	White		Black		Hispanic		Asian Amer/Pacif Isl		Amer Ind/Alaska Natv		Missing	
		Avg.	Pct. (S.E.)	Avg.	Pct. (S.E.)	Avg.	Pct. (S.E.)	Avg.	Pct. (S.E.)	Avg.	Pct. (S.E.)	Avg.	Pct. (S.E.)
2000	9353	285 (0.9)	66% (0.5)	246 (1.5)	14% (0.2)	252 (1.6)	15% (0.2)	288 (3.7)	4% (0.4)	261 (5.6)	1% (0.2)	---	0% (0.1)
1996	5590	281 (1.4)	68% (0.5)	242 (2.1)	15% (0.4)	250 (2.1)	13% (0.3)	---	---	263 (3.3)	1% (0.3)	---	0% (0.1)
1992	6033	277 (1.1)	69% (0.4)	237 (1.3)	16% (0.2)	245 (1.3)	10% (0.3)	287 (6.5)	2% (0.2)	255 (2.9)	1% (0.2)	---	1% (0.1)

Catholic	1990	2879	270 ( 1.5)	70% ( 1.5)	237 ( 2.8)	16% ( 0.3)	242 ( 2.8)	10% ( 0.4)	279 ( 5.4) <sup>†</sup>	2% ( 0.5)	244 ( 9.0) <sup>†</sup>	2% ( 0.7)	---	---	0% ( 0.7)
	2000	2869	289 ( 1.7)	77% ( 2.3)	256 ( 2.7) <sup>†</sup>	8% ( 1.8)	271 ( 1.8)	11% ( 1.3)	296 ( 1.7)	4% ( 0.6)	---	---	---	---	0% ( 0.7)
Other Private	1996	980	288 ( 2.0)	75% ( 5.3)	254 ( 6.5) <sup>†</sup>	8% ( 4.2)	266 ( 6.5) <sup>†</sup>	12% ( 3.1)	---	---	---	0% ( 0.2)	---	---	0% ( **)
	1992	1001	284 ( 1.7)	73% ( 3.4)	249 ( 5.9) <sup>†</sup>	12% ( 2.4)	265 ( 3.0) <sup>†</sup>	10% ( 1.9)	---	3% ( 0.8)	---	1% ( 0.3)	---	---	0% ( 0.1)
	1990	370	280 ( 1.9) <sup>†</sup>	61% ( 7.4)	---	13% ( 4.2)	256 ( 4.9) <sup>†</sup>	21% ( 5.1)	---	4% ( 1.4)	---	0% ( **)	---	---	0% ( **)
	2000	3436	294 ( 1.4)	81% ( 2.0)	262 ( 3.1)	9% ( 1.5)	277 ( 3.0)	6% ( 0.8)	306 ( 4.2)	3% ( 0.5)	---	0% ( 0.3)	---	---	1% ( 0.1)
	1996	576	288 ( 3.6)	86% ( 2.9)	---	6% ( 1.9)	---	5% ( 1.6)	---	---	---	1% ( 0.7)	---	---	---
	1992	629	287 ( 3.8)	83% ( 2.5)	---	4% ( 1.1)	---	8% ( 1.8)	---	4% ( 1.1)	---	1% ( 0.3)	---	---	1% ( 0.4)
	1990	182	273 ( 3.2) <sup>†</sup>	96% ( 2.3)	---	0% ( 0.1)	---	1% ( **)	---	2% ( **)	---	1% ( **)	---	---	---

SCHOOLS-PUBLIC/UP TO 5 NONPUBLIC TYPES

Year	White			Black			Hispanic			Asian Amer/Pacif Isl			Amer Ind/Alaska Natv			Missing	
	Avg.	N Score (S.E.)	Row Pct. (S.E.)	Avg.	Row Pct. (S.E.)	Avg.	Row Pct. (S.E.)	Avg.	Row Pct. (S.E.)	Avg.	Row Pct. (S.E.)	Avg.	Row Pct. (S.E.)	Avg.	Row Pct. (S.E.)	Avg.	Row Pct. (S.E.)
Public	2000	9353	285 ( 0.9)	66% ( 0.5)	246 ( 1.5)	14% ( 0.2)	252 ( 1.6)	15% ( 0.2)	288 ( 3.7)	4% ( 0.4)	261 ( 5.6)	1% ( 0.2)	---	---	0% ( 0.1)	---	---
Catholic	2000	2869	289 ( 1.7)	77% ( 2.3)	256 ( 2.7) <sup>†</sup>	8% ( 1.8)	271 ( 1.8)	11% ( 1.3)	296 ( 1.7)	4% ( 0.6)	---	---	---	---	0% ( 0.7)	---	---
Other Religious	2000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Nonsectarian	2000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Lutheran	2000	929	295 ( 1.7)	86% ( 2.7)	256 ( 3.8) <sup>†</sup>	6% ( 1.8)	275 ( 6.3) <sup>†</sup>	5% ( 1.2)	---	2% ( 0.4)	---	---	---	---	0% ( **)	---	---
Conservative Christian	2000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

--- Sample size is insufficient to permit a reliable estimate.  
(\*\*) Standard error estimates cannot be accurately determined.  
† The nature of the sample does not allow accurate determination of the variability of the statistic.

Note: The score scale for this subject ranges from 0 to 500. Observed differences are not necessarily statistically significant.

SOURCE: U.S. Department of Education, Office of Educational Research and Improvement, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2000, 1996, 1992 and 1990 Mathematics Assessments

## Appendix G

Grade 12 Public and Nonpublic NAEP 2000 Mathematics Assessment

AMS Processing Summary

## Crosstabs

## Public School Only - Weighted

## Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
PARENT SUPPORT FOR STUDENT ACHIEVEMENT * DERIVED RACE	2823463	94.8%	153809	5.2%	2977272	100.0%
AGREE I AM GOOD AT MATH * DERIVED RACE	2842059	95.5%	135213	4.5%	2977272	100.0%
CURRENTLY ENROLLED OR HAVE TAKEN AP CALCULUS AB * DERIVED RACE	2842058	95.5%	135214	4.5%	2977272	100.0%
CURRENTLY ENROLLED OR HAVE TAKEN AP CALCULUS BC * DERIVED RACE	2842057	95.5%	135215	4.5%	2977272	100.0%
CURRENTLY ENROLLED OR HAVE TAKEN AP STATISTICS * DERIVED RACE	2842058	95.5%	135214	4.5%	2977272	100.0%
HAVE NEVER TAKEN ADVANCED PLACEMENT MATHEMATICS * DERIVED RACE	2842058	95.5%	135214	4.5%	2977272	100.0%
INTRO/PRE ALGEBRA - COURSE NOT TAKEN * DERIVED RACE	2842058	95.5%	135214	4.5%	2977272	100.0%
1ST YEAR ALGEBRA - COURSE NOT TAKEN * DERIVED RACE	2842058	95.5%	135214	4.5%	2977272	100.0%
2ND YEAR ALGEBRA - COURSE NOT TAKEN * DERIVED RACE	2842058	95.5%	135214	4.5%	2977272	100.0%

>Warning # 3211

>On at least one case, the value of the weight variable was zero, negative,  
>or missing. Such cases are invisible to statistical procedures and graphs  
>which need positively weighted cases, but remain on the file and are  
>processed by non-statistical facilities such as LIST and SAVE.

## Crosstabs

### NonPublic Schools Only - Weighted

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
PARENT SUPPORT FOR STUDENT ACHIEVEMENT * DERIVED RACE	264339	94.5%	15407	5.5%	279746	100.0%
AGREE I AM GOOD AT MATH * DERIVED RACE	276096	98.7%	3650	1.3%	279746	100.0%
CURRENTLY ENROLLED OR HAVE TAKEN AP CALCULUS AB * DERIVED RACE	276096	98.7%	3650	1.3%	279746	100.0%
CURRENTLY ENROLLED OR HAVE TAKEN AP CALCULUS BC * DERIVED RACE	276100	98.7%	3646	1.3%	279746	100.0%
CURRENTLY ENROLLED OR HAVE TAKEN AP STATISTICS * DERIVED RACE	276095	98.7%	3651	1.3%	279746	100.0%
HAVE NEVER TAKEN ADVANCED PLACEMENT MATHEMATICS * DERIVED RACE	276098	98.7%	3648	1.3%	279746	100.0%
INTRO/PRE ALGEBRA - COURSE NOT TAKEN * DERIVED RACE	276096	98.7%	3650	1.3%	279746	100.0%
1ST YEAR ALGEBRA - COURSE NOT TAKEN * DERIVED RACE	276096	98.7%	3650	1.3%	279746	100.0%
2ND YEAR ALGEBRA - COURSE NOT TAKEN * DERIVED RACE	276097	98.7%	3649	1.3%	279746	100.0%

## Appendix H

Grade 12 Public and Nonpublic NAEP 2000 Mathematics Assessment

SPSS Processing Summary

Grade 12 NAEP 2000 Frequencies

Frequencies

Statistics

DERIVED RACE

N	Valid	2977272
	Missing	0

Public School Only - Weighted

DERIVED RACE

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid WHITE	2050936	68.9	68.9	68.9
BLACK	435383	14.6	14.6	83.5
HISPANIC	333616	11.2	11.2	94.7
ASIAN	133909	4.5	4.5	99.2
AMERICAN INDIAN	19625	.7	.7	99.9
UNCLASSIFIED	3803	.1	.1	100.0
Total	2977272	100.0	100.0	

>Warning # 3211  
>On at least one case, the value of the weight variable was zero, negative,  
>or missing. Such cases are invisible to statistical procedures and graphs  
>which need positively weighted cases, but remain on the file and are  
>processed by non-statistical facilities such as LIST and SAVE.

Statistics

DERIVED RACE

N	Valid	279746
	Missing	0

Non-public School Only - Weighted

DERIVED RACE

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid WHITE	227894	81.5	81.5	81.5
BLACK	19267	6.9	6.9	88.4
HISPANIC	20645	7.4	7.4	95.7
ASIAN	9318	3.3	3.3	99.1
AMERICAN INDIAN	1310	.5	.5	99.5
UNCLASSIFIED	1312	.5	.5	100.0
Total	279746	100.0	100.0	

>Warning # 3211  
>On at least one case, the value of the weight variable was zero, negative,  
>or missing. Such cases are invisible to statistical procedures and graphs  
>which need positively weighted cases, but remain on the file and are  
>processed by non-statistical facilities such as LIST and SAVE.

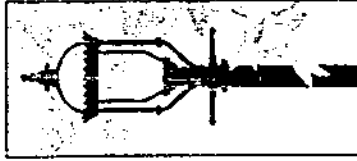
Validation of Forum Attendance

Name: Denise Brown-Allen

Forum Title: Closing the Achievement Gap: Challenges, Questions & Solutions

Presenter: Dr. Ron Ferguson

Date & Time: May 16, 2002 7:00 pm 2.5 hours



South Orange  
Maplewood  
COMMUNITY  
COALITION  
on Race

South Orange/Maplewood Community Coalition on Race, Inc.  
2130 Millburn Avenue, P.O. Box 1309  
Maplewood, NJ 07040  
973-761-6116 info@twotowns.org www.twotowns.org  
NJDOE Registered Provider # 4317

The South Orange/Maplewood Community Coalition on Race will not be responsible for lost certificates.



## Appendix I

Grade 12 Public and Nonpublic NAEP 2000 Mathematics Assessment

NAEP Data Tool v2.0 Report of Average Scale Scores

NAEP Data  
The Nation's Report Card (home)

National/Mathematics Composite/Accommodations Not Permitted/Grade 12/2000, 1996, 1992 and 1990  
Student race/ethnicity used for NAEP reporting (based on student responses to two background questions) (student-reported) / RACEETH  
Average Scale Score and Row Percentage (with Standard Errors in Parentheses)

		White				Black				Hispanic				Asian Amer/Pacif Isl				Amer Ind/Alaska Natv				Missing				
		Avg. NScore (S.E.)	Pct. (S.E.)	Row	Avg. Score (S.E.)	Pct. (S.E.)	Row	Avg. Score (S.E.)	Pct. (S.E.)	Row	Avg. Score (S.E.)	Pct. (S.E.)	Row	Avg. Score (S.E.)	Pct. (S.E.)	Row	Avg. Score (S.E.)	Pct. (S.E.)	Row	Avg. Score (S.E.)	Pct. (S.E.)					
OVERALL	Year																									
	2000	13432	308 ( 1.0)	70%	( 0.4)	274 ( 1.9)	14%	( 0.3)	283 ( 2.1)	11%	( 0.2)	319 ( 2.8)	5%	( 0.2)	293 ( 4.4)	1%	( 0.1)	—	( —)	0%	( 0.1)	—	( —)	0%	( 0.1)	
	1996	6904	311 ( 1.0)	70%	( 0.5)	280 ( 2.2)	14%	( 0.4)	287 ( 1.8)	11%	( 0.4)	319 ( 4.8)	4%	( 0.4)	279 ( 8.9)	1%	( 0.6)	—	( —)	0%	( 0.1)	—	( —)	0%	( 0.1)	
	1992	6973	306 ( 0.9)	71%	( 0.6)	276 ( 1.7)	15%	( 0.4)	284 ( 1.7)	9%	( 0.5)	315 ( 3.5)	4%	( 0.2)	—	( —)	1%	( 0.1)	—	( —)	0%	( 0.1)	—	( —)	0%	( 0.1)
	1990	3138	301 ( 1.2)	74%	( 0.6)	268 ( 1.9)	14%	( 0.5)	276 ( 2.8)	8%	( 0.2)	311 ( 5.2)	3%	( 0.3)	—	( —)	1%	( 0.3)	—	( —)	0%	( —)	—	( —)	0%	( —)
SCHOOLS-PUBLIC/NONPUBLIC																										
Public	Year																									
	2000	6874	307 ( 1.2)	69%	( 0.4)	273 ( 2.0)	14%	( 0.3)	281 ( 2.3)	11%	( 0.2)	318 ( 3.0)	5%	( 0.2)	292 ( 4.5)	1%	( 0.1)	—	( —)	0%	( 0.1)	—	( —)	0%	( 0.1)	
	1996	5398	310 ( 1.0)	69%	( 0.9)	279 ( 2.3)	15%	( 0.5)	287 ( 1.9)	11%	( 0.5)	318 ( 5.3)	4%	( 0.4)	—	( —)	1%	( 0.3)	—	( —)	0%	( 0.1)	—	( —)	0%	( 0.1)
	1992	5474	304 ( 1.0)	70%	( 0.9)	275 ( 1.7)	16%	( 0.5)	282 ( 2.2)	10%	( 0.8)	314 ( 3.9)	4%	( 0.3)	—	( —)	1%	( 0.1)	—	( —)	0%	( 0.1)	—	( —)	0%	( 0.1)
	1990	2526	300 ( 1.3)	73%	( 0.8)	268 ( 2.0)	15%	( 0.6)	275 ( 3.0)	8%	( 0.4)	310 ( 5.5)	3%	( 0.4)	—	( —)	1%	( 0.3)	—	( —)	0%	( 0.1)	—	( —)	0%	( 0.1)
Nonpublic	2000	6558	317 ( 1.2)	81%	( 1.4)	293 ( 3.0)	7%	( 0.9)	302 ( 2.4)	7%	( 0.9)	328 ( 3.2)	3%	( 0.6)	—	( —)	0%	( 0.1)	—	( —)	0%	( 0.1)	—	( —)	0%	( 0.1)
	1996	1455	317 ( 2.3)	81%	( 2.9)	298 ( 3.0)	6%	( 1.3)	295 ( 5.3)	9%	( 1.9)	327 ( 4.3)	3%	( 0.8)	—	( —)	0%	( 0.1)	—	( —)	0%	( 0.1)	—	( —)	0%	( 0.1)
	1992	1499	317 ( 2.4)	80%	( 2.5)	295 ( 4.1)	7%	( 1.6)	297 ( 2.6)	9%	( 1.8)	333 ( 4.1)	3%	( 0.8)	—	( —)	0%	( 0.1)	—	( —)	0%	( 0.1)	—	( —)	0%	( 0.1)
	1990	612	304 ( 3.4)	76%	( 5.2)	272 ( 4.7)	11%	( 3.0)	283 ( 3.3)	9%	( 3.2)	—	( —)	4%	( 1.5)	—	( —)	—	( —)	—	( —)	—	( —)	—	( —)	0%
SCHOOLS-PUBLIC/CATHOLIC/OTHER NONPUBLIC																										
Public	Year																									
	2000	6874	307 ( 1.2)	69%	( 0.4)	273 ( 2.0)	14%	( 0.3)	281 ( 2.3)	11%	( 0.2)	318 ( 3.0)	5%	( 0.2)	292 ( 4.5)	1%	( 0.1)	—	( —)	0%	( 0.1)	—	( —)	0%	( 0.1)	
	1996	5398	310 ( 1.0)	69%	( 0.9)	279 ( 2.3)	15%	( 0.5)	287 ( 1.9)	11%	( 0.5)	318 ( 5.3)	4%	( 0.4)	—	( —)	1%	( 0.3)	—	( —)	0%	( 0.1)	—	( —)	0%	( 0.1)

Catholic	1992	5474	304 ( 1.0)	70% ( 0.9)	275 ( 1.7)	16% ( 0.5)	282 ( 2.2)	10% ( 0.8)	314 ( 3.9)	4% ( 0.3)	---	---	1% ( 0.1)	---	0% ( 0.1)
	1990	2526	300 ( 1.3)	73% ( 0.8)	268 ( 2.0)	15% ( 0.6)	275 ( 3.0)	8% ( 0.4)	310 ( 5.5)	3% ( 0.4)	---	---	1% ( 0.3)	---	0% ( 0.1)
	2000	2859	318 ( 1.3)	80% ( 1.9)	291 ( 3.4)	6% ( 1.2)	301 ( 3.2)	9% ( 1.3)	324 ( 5.8) <sup>†</sup>	3% ( 0.7)	---	---	0% ( 0.1)	---	0% ( 0.1)
	1996	934	315 ( 2.3)	78% ( 4.1)	---	---	---	12% ( 2.7)	---	3% ( 0.6)	---	---	0% ( 0.1)	---	0% ( 0.1)
	1992	992	315 ( 2.5)	79% ( 3.5)	288 ( 3.9) <sup>†</sup>	8% ( 2.3)	297 ( 2.9) <sup>†</sup>	11% ( 2.7)	---	2% ( 0.7)	---	---	0% ( 0.1)	---	0% ( 0.1)
Other Private	1990	412	309 ( 3.9) <sup>†</sup>	70% ( 7.8)	---	16% ( 4.4)	---	11% ( 5.0)	---	3% ( 1.6)	---	---	0% ( 0.1)	---	0% ( 0.1)
	2000	3699	317 ( 1.9)	83% ( 1.9)	296 ( 4.5)	8% ( 1.2)	305 ( 3.5)	5% ( 0.8)	333 ( 2.5)	3% ( 0.6)	---	---	0% ( 0.1)	---	0% ( 0.1)
	1996	521	322 ( 4.0) <sup>†</sup>	87% ( 3.8)	---	4% ( 1.6)	---	5% ( 2.1)	---	4% ( 1.6)	---	---	0% ( 0.2)	---	0% ( 0.1)
	1992	507	320 ( 4.4) <sup>†</sup>	83% ( 3.7)	---	5% ( 1.3)	---	6% ( 1.5)	---	5% ( 1.6)	---	---	1% ( 0.3)	---	1% ( 0.1)
	1990	200	299 ( 4.6) <sup>†</sup>	87% ( 4.9)	---	4% ( 1.4)	---	5% ( 3.3)	---	4% ( 2.2)	---	---	---	---	---

SCHOOLS-PUBLICUP TO 5 NONPUBLIC TYPES

Year	White			Black			Hispanic			Asian Amer/Pacif Isl			Amer Ind/Alaska Natv			Missing		
	Avg. N Score (S.E.)			Avg. N Score (S.E.)			Avg. N Score (S.E.)			Avg. N Score (S.E.)			Avg. N Score (S.E.)			Avg. N Score (S.E.)		
	Pct. (S.E.)	Row	Pct. (S.E.)	Row	Pct. (S.E.)	Row	Pct. (S.E.)	Row	Pct. (S.E.)	Row	Pct. (S.E.)	Row	Pct. (S.E.)	Row	Pct. (S.E.)	Row	Pct. (S.E.)	Row
Public	6874	307 ( 1.2)	69% ( 0.4)	273 ( 2.0)	14% ( 0.3)	281 ( 2.3)	11% ( 0.2)	318 ( 3.0)	5% ( 0.2)	292 ( 4.5) <sup>†</sup>	1% ( 0.1)	---	---	---	---	---	---	---
Catholic	2859	318 ( 1.3)	80% ( 1.9)	291 ( 3.4)	6% ( 1.2)	301 ( 3.2)	9% ( 1.3)	324 ( 5.8) <sup>†</sup>	3% ( 0.7)	---	---	---	---	---	---	---	---	---
Other Religious	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Nonsectarian	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Lutheran	1022	317 ( 1.8)	80% ( 2.5)	289 ( 2.9)	11% ( 2.0)	297 ( 4.7)	5% ( 0.9)	---	---	---	---	---	---	---	---	---	---	---
Conservative Christian	865	313 ( 1.9)	86% ( 2.4)	---	6% ( 1.5)	---	---	5% ( 1.8)	---	2% ( 0.5)	---	---	1% ( 0.4)	---	---	---	---	---

--- Sample size is insufficient to permit a reliable estimate.

(\*\*\*) Standard error estimates cannot be accurately determined.

† The nature of the sample does not allow accurate determination of the variability of the statistic.

Note: The score scale for this subject ranges from 0 to 500. Observed differences are not necessarily statistically significant.

SOURCE: U.S. Department of Education, Office of Educational Research and Improvement, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2000, 1996, 1992 and 1990 Mathematics Assessments